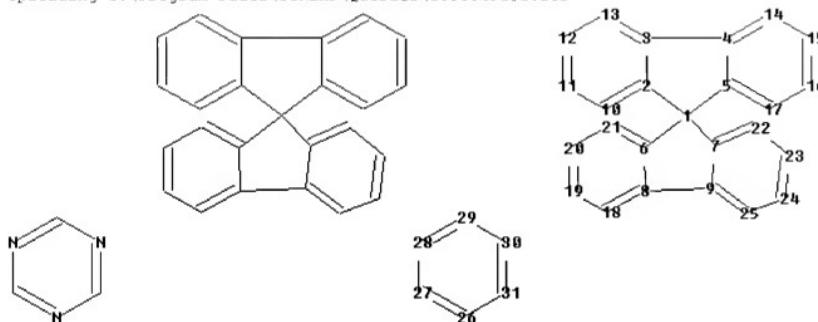


STN-10/580, 491

=>

Uploading C:\Program Files\STNEXP\Queries\10580491#1.str



ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28 29 30 31

ring bonds :

1-2 1-5 1-6 1-7 2-3 2-10 3-4 3-13 4-5 4-14 5-17 6-8 6-21 7-9 7-22
8-9 8-18 9-25 10-11 11-12 12-13 14-15 15-16 16-17 18-19 19-20 20-21 22-
23 23-24 24-25
26-27 26-31 27-28 28-29 29-30 30-31

exact bonds :

1-2 1-5 1-6 1-7 3-4 8-9

normalized bonds :

2-3 2-10 3-13 4-5 4-14 5-17 6-8 6-21 7-9 7-22 8-18 9-25 10-11 11-12
12-13 14-15 15-16 16-17 18-19 19-20 20-21 22-23 23-24 24-25 26-27 26-31
27-28 28-29

29-30 30-31

isolated ring systems :

containing 1 : 26 :

Match level :

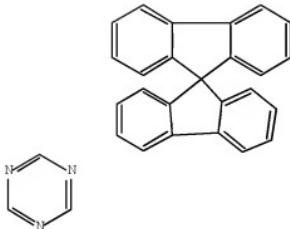
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
20:Atom 21:Atom
22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom 29:Atom 30:Atom
31:Atom

L1 STRUCTURE UPLOADED

=> d l1

L1 HAS NO ANSWERS

L1 STR



Structure attributes must be viewed using STN Express query preparation.

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=> s 11
SAMPLE SEARCH INITIATED 15:57:59 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED -      15 TO ITERATE

100.0% PROCESSED      15 ITERATIONS          1 ANSWERS
SEARCH TIME: 00.00.01
```

| | | |
|------------------------|--------|--------------|
| FULL FILE PROJECTIONS: | ONLINE | **COMPLETE** |
| | BATCH | **COMPLETE** |
| PROJECTED ITERATIONS: | 68 TO | 532 |
| PROJECTED ANSWERS: | 1 TO | 80 |

L2 1 SEA SSS SAM L1

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=> s 11 full
FULL SEARCH INITIATED 15:58:07 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -      247 TO ITERATE
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100.0% PROCESSED      247 ITERATIONS          39 ANSWERS
SEARCH TIME: 00.00.01
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L3 39 SEA SSS FUL L1

This file contains CAS Registry Numbers for easy and accurate substance identification.

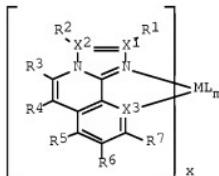
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=> s 13
L4      13 L3
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=> d ibib abs hitstr 1-13

| | | |
|-------------------|---|----------------------------------|
| L4 | ANSWER 1 OF 13 | CAPLUS COPYRIGHT 2010 ACS on STN |
| ACCESSION NUMBER: | 2010:968590 | CAPLUS <u>Full-text</u> |
| DOCUMENT NUMBER: | 153:287153 | |
| TITLE: | Cyclometalated transition metal complexes with condensed polyheterocyclic bidentate ligands as dopants for organic electroluminescent devices | |
| INVENTOR(S): | Stoessel, Philipp; Heil, Holger; Jooseten, Dominik; Pflumm, Christof; Gerhard, Anja; Breuning, Esther | |

PATENT ASSIGNEE(S): Merck Patent GmbH, Germany
 SOURCE: PCT Int. Appl., 208pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------------|----------|
| WO 2010086089 | A1 | 20100805 | WO 2010-EP177 | 20100114 |
| W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW | | | | |
| RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| DE 102009007038 | A1 | 20100805 | DE 2009-102009007038 | 20090202 |
| PRIORITY APPLN. INFO.: | | | DE 2009-102009007038A | 20090202 |
| GI | | | | |



AB Transition metal complexes of cyclometalated condensed heterocyclic ligands, preferably complexes I [1, M = transition metal, preferably M = Ir, Pt; R = H, halo, amino, CN, NO₂, silyl, boryl, acyl, phosphoryl, sulfinyl, sulfonyl, sulfate, Cl-40 alkyl(oxy), alkylthio, aryl, hetaryl, etc.; L = an auxiliary ligand, preferably, L = acac, 2-picolinato, pyrazolylborato; x = 1-4, m = 0-6, preferably, x = 1-3, m = 0, 1], provided that the ring atoms together feature a 14π-electron aromatic system, useful as dopants for light-emitting layers in blue-emitting organic electroluminescent devices, were prepared by cyclometalation of the corresponding ligands or cycloaddn. of carbonyl compds. or alkynes to coordinated 1-aminoisoquinolines. In an example, reaction of 12.5 mmol of the ligand, imidazo[2,1-a]isoquinoline with 2.5 mmol of Na[Ir(acac)₂C₁₂] in 5 mL of triethyleneglycol at 240° for 24 h gave the complex I (1a, M = Ir, R₁-R₇ = H, X₁ = X₃ = C; x = 3, m = 0) with 19% yield. In another example, an OLED device was constructed, comprising 1a as a dopant

to a 40 nm light-emitting layer [tris-6-phenyl-2-pyridinylphosphine oxide:bis(N,N'-diphenyl-1,2-phenylenediamino)silane:la = 80:10:10], which exhibited an efficiency of 9.4 cd/A at 1000 cd m⁻² and 6.1 V voltage, having a lifetime of 1300 h.

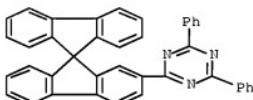
IT 1207176-84-8

RL: NANO (Nanomaterial); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (preparation of cyclometalated iridium and platinum complexes with condensed

heterocyclic imidazo[2,1-a]isoquinoline ligands as dopants for light-emitting layers in OLEDs)

RN 1207176-84-8 CAPLUS

CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:815182 CAPLUS Full-text

DOCUMENT NUMBER: 153:130227

TITLE: Organic electroluminescent devices comprising triazine derivative-based electron transport layers

INVENTOR(S): Pflumm, Christof; Leu, Simone; Kaiser, Joachim; Parham, Amir; Voges, Frank; Kroeber, Jonas; Buesing, Arne

PATENT ASSIGNEE(S): Merck Patent GmbH, Germany

SOURCE: Ger. Offen., 57pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

DOCUMENT ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|----------------------|----------|
| DE 102008064200 | A1 | 20100701 | DE 2008-102008064200 | 20081222 |
| KR 2010073954 | A | 20100701 | KR 2009-32570 | 20090415 |
| WO 2010072300 | A1 | 20100701 | WO 2009-EP08441 | 20091126 |
| W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW | | | | |
| RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, | | | | |

SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
PRIORITY APPLN. INFO.: DE 2008-102008064200A 20081222
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

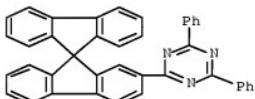
AB Organic electroluminescent devices having cathode-side electron transport layers are described in which the electron transport layer includes ≥ 1 compds. described by the general formulas I and II (Ar, Ar' = (un)substituted triazine groups; R1 = independently selected at each occurrence from H, D, F, Cl, Br, I, CHO, amine groups, CN, NO₂, silyl, etc.; m = 0-3; n = 0-1; and o = 0-4 when n = 0 on the same ring and 0-3 when n = 1 on the same ring); alternately the the electron transport layer may comprise ≥ 1 compds. described by the general formulas III or IV (Ar2 = independently selected at each occurrence from monovalent (un)substituted C5-60 (hetero)aromatic groups; and Ar3 = a bivalent (un)substituted C5-60 (hetero)aromatic group) doped with an organic alkali metal compound Methods for fabricating the devices using vapor deposition and/or solution deposition methods to form the layers, mixts. of III or IV and ≥ 1 organic alkali metal compound, and selected compds. described by the general formulas III and IV are also described.

IT 1207176-84-8

RL: TEM (Technical or engineered material use); USES (Uses)
(organic electroluminescent devices comprising triazine derivative-based electron transport layers)

RN 1207176-84-8 CAPLUS

CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



L4 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:812409 CAPLUS [Full-text](#)
DOCUMENT NUMBER: 153:130216
TITLE: Organic electroluminescent devices comprising triazine derivative-based electron transport layers
INVENTOR(S): Pflumm, Christof; Leu, Simone; Kaiser, Joachim; Parham, Amir Hossain; Voges, Frank; Kroeker, Jonas Valentin; Buesing, Arne
PATENT ASSIGNEE(S): Merck Patent G.m.b.H., Germany
SOURCE: PCT Int. Appl., 95pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------------|----------|
| WO 2010072300 | A1 | 20100701 | WO 2009-EP8441 | 20091126 |
| W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| DE 102008064200 | A1 | 20100701 | DE 2008-102008064200 | 20081222 |
| PRIORITY APPLN. INFO.: | | | DE 2008-102008064200A | 20081222 |
| GI | | | | |

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Organic electroluminescent devices having cathode-side electron transport layers are described in which the electron transport layer includes ≥ 1 compds. described by the general formulas I and II ($Ar, Ar' = (un)substituted triazine groups; R1 = independently selected at each occurrence from H, D, F, Cl, Br, I, CHO, amine groups, CN, NO2, silyls, etc.; m = 0-3; n = 0-1; and o = 0-4 when n = 0 on the same ring and 0-3 when n = 1 on the same ring); alternately the the electron transport layer may comprise ≥ 1 compds. described by the general formulas III or IV ($Ar2 = independently selected at each occurrence from monovalent (un)substituted C5-60 (hetero)aromatic groups; and Ar3 = a bivalent (un)substituted C5-60 (hetero)aromatic group doped with an organic alkali metal compound Methods for fabricating the devices using vapor deposition and/or solution deposition methods to form the layers, mixts. of III or IV and ≥ 1 organic alkali metal compound, and selected compds. described by the general formulas III and IV are also described.$$

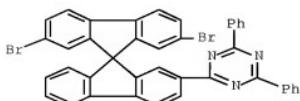
IT 1233200-66-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

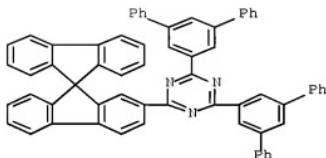
(organic electroluminescent devices comprising triazine derivative-based electron transport layers)

RN 1233200-66-2 CAPLUS

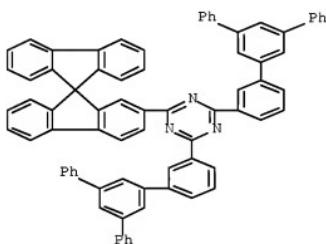
CN 1,3,5-Triazine, 2-(2',7'-dibromo-9,9'-spirobi[9H-fluoren]-2-yl)-4,6-diphenyl- (CA INDEX NAME)



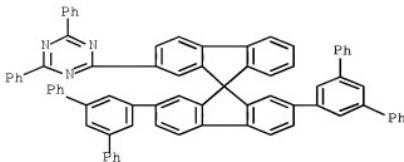
IT 1233200-52-6P 1233200-56-0P 1233200-64-0P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (organic electroluminescent devices comprising triazine derivative-based electron transport layers)
 RN 1233200-52-6 CAPLUS
 CN 1,3,5-Triazine, 2-(9,9'-spirobi[9H-fluoren]-2-yl)-4,6-bis([1,1':3',1'''-terphenyl]-5'-yl)- (CA INDEX NAME)



RN 1233200-56-0 CAPLUS
 CN 1,3,5-Triazine, 2,4-bis(5'-phenyl[1,1':3',1'''-terphenyl]-3-yl)-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



RN 1233200-64-0 CAPLUS
 CN 1,3,5-Triazine, 2-[2,7-bis([1,1':3',1'''-terphenyl]-5'-yl)-9,9'-spirobi[9H-fluoren]-2-yl]-4,6-diphenyl- (CA INDEX NAME)

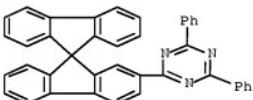


IT 1207176-84-8

RL: TEM (Technical or engineered material use); USES (Uses)
(organic electroluminescent devices comprising triazine derivative-based
electron transport layers)

RN 1207176-84-8 CAPLUS

CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX
NAME)



REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:621353 CAPLUS Full-text

DOCUMENT NUMBER: 152:592162

TITLE: Cyclic arylphosphonic acid derivatives as
supplementary materials for organic electroluminescent
devices

INVENTOR(S): Stoessel, Philipp; Heil, Holger; Joosten, Dominik;
Pflumm, Christof; Gerhard, Anja; Breuning, Esther;
Parham, Amir Hossain

PATENT ASSIGNEE(S): Merck Patent GmbH, Germany
SOURCE: PCT Int. Appl., 10lpp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2010054730 | A1 | 20100520 | WO 2009-EP7406 | 20091015 |
| W: | AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, | | | |

MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE,
PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV,
SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE,
SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

DE 102008056688 A1 20100512 DE 2008-102008056688 20081111

PRIORITY APPLN. INFO.: DE 2008-102008056688A 20081111

DE 2009-102009022858A 20090527

OTHER SOURCE(S): MARPAT 152:592162

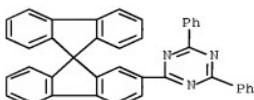
AB Phosphorus heterocyclic compds., preferably diazaphosphole, oxazaphosphole oxides, sulfides [OZ2P(X)]nAr (1, Q = benzo, areno, hetareno, substituted 1,2-ethenediyl, etc.; Z = imino, O, S; X = O, S, preferably X = O; Ar = C6-60 aryl, arylene; n = 1-6, preferably n = 1-3), useful as matrix and/or supplementary materials for organic electroluminescent devices (OLEDs), preferably for blue- and green-emitting OLEDs, based on phosphorescent transition metal complexes, improving performance, efficiency and lifetime of the OLEDs, for making of emitting, electron-, exciton-, or hole-blocking layers, were prepared by heterocyclization of aromatic o-diamines, o-aminophenols Q(AH)2 with phosphonic dichlorides Ar[P(X)Cl2]n, which, in turn were prepared from the corresponding arylphosphonic, arenediphosphonic and arenetriphosphonic acids. The prepared compds. were tested in model OLEDs by doping the emission and hole-blocking layers, showing increase of efficiency and lifetime of the devices. In an example, 2,2'-(1,4-phenylene)bis(5,6-dimethyl-1,3-diphenyl[1,3,2]benzophosphole) P,P'-dioxide (la, Q = 4,5-dimethylbenzene-1,2-diyl, Z = NPh, X = O, n = 2, Ar = 1,4-C6H4) was prepared by heterocyclization of 4,5-dimethyl-N,N'-diphenyl-1,2-benzenediamine with 1,4-benzenediphosphonic tetrachloride, Cl2P(O)-1,4-C6H4P(O)Cl2. In another example, the compound la, as matrix material doped with 10% tris(3-methyl-2-phenylpyridine)iridium for 30 nm-thick light-emitting layer, showed 57 cd/A efficiency at 1000 cd m-2 light d. and 560 h lifetime at 4000 cd m-2 light d., compared with 42 cd/A and 230 h for similar device using bis(9,9'-spirobifluoren-2-yl)phenylphosphine oxide as matrix material.

IT 1207176-84-8

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of cyclic arylphosphonic acid derivs.,
benzo[1,3,2]-diazaphosphole oxides as supplementary materials for organic
electroluminescent devices)

RN 1207176-84-8 CAPLUS

CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



REFERENCE COUNT:

5

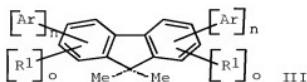
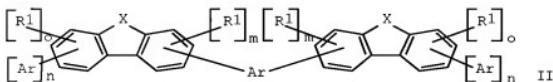
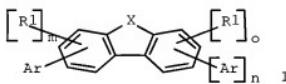
THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
 ACCESSION NUMBER: 2010:180208 CAPLUS [Full-text](#)
 DOCUMENT NUMBER: 152:274907
 TITLE: Organic electroluminescent devices with emitting
 layers using fluorene-like and spirobifluorene-like
 hosts
 INVENTOR(S): Parham, Amir; Kaiser, Joachim; Gerhard, Anja; Kroeber,
 Jonas
 PATENT ASSIGNEE(S): Merck Patent GmbH, Germany
 SOURCE: Ger. Offen., 32pp.; Chemical Indexing Equivalent to
 152:274903 (WO)
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-----------------|------|----------|----------------------|----------|
| DE 102008036982 | A1 | 20100211 | DE 2008-102008036982 | 20080808 |
| WO 2010015306 | A1 | 20100211 | WO 2009-EP4954 | 20090708 |

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
 CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
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 KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA,
 MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE,
 PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV,
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
 IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
 SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
 ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: DE 2008-102008036982A 20080808
 GI



AB Organic electroluminescent devices are described which include ≥ 1 emitting layer comprising a phosphorescent compound (especially a metal complex) and ≥ 1 compound are described by the general formula I and II (Ar = independently selected at each occurrence from (un)substituted triazine, pyrazine, pyrimidine, pyridazine, pyrazole, imidazole, oxazole, oxadiazole, or thiazole; X = independently selected at each occurrence III or a bivalent bridge selected from BR1, C(R1)2, Si(R1)2, C:C(R1)2, O, S, S:O, SO2, NR1, PR1, and P(:O)R1; R1 = independently selected at each occurrence from H, D, F, Cl, Br, I, CHO, arylamine, CN, Cl-40 alkyl, Cl-40 alkoxy, etc., and ≥ 2 adjacent R1s can bond to form ring systems; n = 0 or 1; m = 0-3; and o = 0-4 if n = 0 and 0-3 if n = 1). A method for producing the devices including the use of a sublimation or organic vapor deposition method, organic vapor jet printing method, a carrier gas sublimation method, a solution deposition method, or solution printing method to form layers is also described. Use of the compds. as matrix materials in organic electroluminescent devices and mixts. including the compds. and ≥ 1 phosphorescent compound are claimed as well.

IT 853154-59-3P, 2,7-Bis(4,6-diphenyl-1,3,5-triazin-2-yl)-2',7'-di-tert-butylspiro-9,9'-bifluorene 853154-60-6P,
2,7-Bis(4,6-diphenyl-1,3,5-triazin-2-yl)spiro-9,9'-bifluorene
1207176-84-8P, 2-(4,6-Diphenyl-1,3,5-triazin-2-yl)spiro-9,9'-bifluorene

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(organic electroluminescent devices with emitting layers using fluorene-like and spirobifluorene-like hosts)

RN 853154-59-3 CAPLUS

CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 853154-60-6 CAPLUS

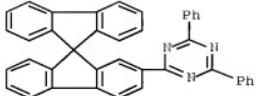
CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 1207176-84-8 CAPLUS

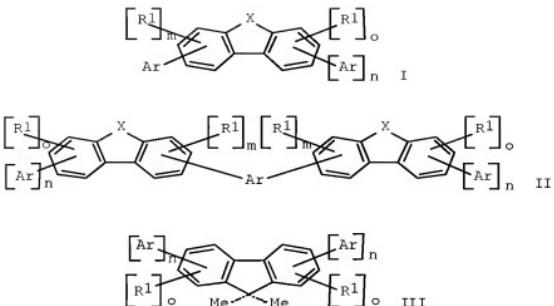
CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX

NAME)



L4 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:178610 CAPLUS [Full-text](#)
DOCUMENT NUMBER: 152:274903
TITLE: Organic electroluminescent devices with emitting layers using fluorene-like and spirobifluorene-like hosts
INVENTOR(S): Parham, Amir Hossain; Kaiser, Joachim; Gerhard, Anja; Kroeber, Jonas Valentin
PATENT ASSIGNEE(S): Merck Patent GmbH, Germany
SOURCE: PCT Int. Appl., 55pp.; Chemical Indexing Equivalent to 152:274907 (DE)
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--------|------------|-----------------------|----------|
| WO 2010015306 | A1 | 20100211 | WO 2009-EP4954 | 20090708 |
| W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW | | | | |
| RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| DE 102008036982 | A1 | 20100211 | DE 2008-102008036982 | 20080808 |
| PRIORITY APPLN. INFO.: | | | DE 2008-102008036982A | 20080808 |
| OTHER SOURCE(S): | MARPAT | 152:274903 | | |
| GI | | | | |



AB Organic electroluminescent devices are described which include ≥ 1 emitting layer comprising a phosphorescent compound (especially a metal complex) and ≥ 1 compound are described by the general formula I and II (Ar = independently selected at each occurrence from (un)substituted triazine, pyrazine, pyrimidine, pyridazine, pyrazole, imidazole, oxazole, oxadiazole, or thiazole; X = independently selected at each occurrence III or a bivalent bridge selected from BR1, C(R1)2, Si(R1)2, C:C(R1)2, O, S, S:O, SO2, NR1, PR1, and P(:O)R1; R1 = independently selected at each occurrence from H, D, F, Cl, Br, I, CHO, arylamine, CN, Cl-40 alkyl, Cl-40 alkoxy, etc., and ≥ 2 adjacent R1s can bond to form ring systems; n = 0 or 1; m = 0-3; and o = 0-4 if n = 0 and 0-3 if n = 1). A method for producing the devices including the use of a sublimation or organic vapor deposition method, organic vapor jet printing method, a carrier gas sublimation method, a solution deposition method, or solution printing method to form layers is also described. Use of the compds. as matrix materials in organic electroluminescent devices, mixts. including the compds. and ≥ 1 phosphorescent compound, and solns. of the mixts. with an organic solvent are claimed as well.

IT 853154-59-3P, 2,7-Bis(4,6-diphenyl-1,3,5-triazin-2-yl)-2',7'-ditem-butylspiro-9,9'-bifluorene 853154-60-6P,
2,7-Bis(4,6-diphenyl-1,3,5-triazin-2-yl)spiro-9,9'-bifluorene
1207176-84-8P, 2-(4,6-Diphenyl-1,3,5-triazin-2-yl)spiro-9,9'-bifluorene

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(organic electroluminescent devices with emitting layers using
fluorene-like and spirobifluorene-like hosts)

RN 853154-59-3 CAPLUS

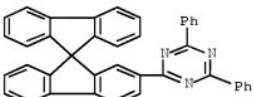
CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl]bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 853154-60-6 CAPLUS
 CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)]



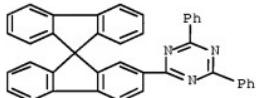
RN 1207176-84-8 CAPLUS
 CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD
 (2 CITINGS)
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
 ACCESSION NUMBER: 2010:146936 CAPLUS [Full-text](#)
 DOCUMENT NUMBER: 152:228678
 TITLE: Organic electroluminescent device with blue-emitting layer
 INVENTOR(S): Kaiser, Joachim; Vestweber, Horst; Leu, Simone;
 Buesing, Arne; Heil, Holger; Stoessel, Philipp
 PATENT ASSIGNEE(S): Merck Patent G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 66pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

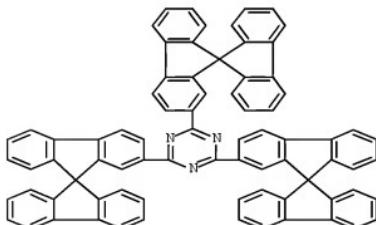
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|----------|-----------------------|----------|
| WO 2010012330 | A1 | 20100204 | WO 2009-EP3660 | 20090522 |
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| RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| DE 102008035413 | A1 | 20100204 | DE 2008-102008035413 | 20080729 |
| PRIORITY APPLN. INFO.: | | | DE 2008-102008035413A | 20080729 |
| OTHER SOURCE(S): | MARPAT 152:228678 | | | |
| AB | The present invention relates to white emitting organic electroluminescent devices having at least one blue fluorescent emitter layer containing an aryl or heteroaryl compound as a blue-emitting material. The devices have an improved service life. | | | |
| IT 1207176-84-8 | RL: TEM (Technical or engineered material use); USES (Uses) (organic electroluminescent device with blue-emitting layer containing aryl or heteroaryl compound for improved service life) | | | |
| RN 1207176-84-8 CAPLUS | | | | |
| CN 1,3,5-Triazine, 2,4-diphenyl-6-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME) | | | | |



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
 ACCESSION NUMBER: 2009:1312566 CAPLUS [Full-text](#)
 DOCUMENT NUMBER: 152:86251
 TITLE: 1,3,5-Triazine derivatives as new electron transport-type host materials for highly efficient green phosphorescent OLEDs
 AUTHOR(S): Chen, Hsiao-Fan; Yang, Shang-Jung; Tsai, Zhen-Han; Hung, Wen-Yi; Wang, Ting-Chih; Wong, Ken-Tsung
 CORPORATE SOURCE: Department of Chemistry, National Taiwan University, Taipei, 106, Taiwan
 SOURCE: Journal of Materials Chemistry (2009), 19(43), 8112-8118
 CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 152:86251
 AB Three star-shaped 1,3,5-triazine derivs., 2,4,6-tris(biphenyl-3-yl)-1,3,5-triazine (T2T), 2,4,6-tris(triphenyl-3-yl)-1,3,5-triazine (T3T), and 2,4,6-tris(9,9'-spirobifluoren-2-yl)-1,3,5-triazine (TST), were synthesized as new electron transport (ET)-type host materials for green phosphorescent organic light-emitting devices. The morphol., thermal, and photophys. properties and the electron mobilities of these ET-type host materials are influenced by the nature of the aryl substituents attached to the triazene core. The meta-meta linkage between the 1,3,5-triazine core and the peripheral aryl moieties in T2T and T3T limited the effective extension of their π conjugation, leading to high triplet energies of 2.80 and 2.69 eV, resp. Time-of-flight mobility measurements revealed the good electron mobilities for (each $> 10^{-4}$ cm² V⁻¹ s⁻¹), following the order T3T > TST > T2T. The device incorporating T2T as the host, doped with (PPy)2Ir(acac) and 1,3,5-tris(N-phenylbenzimidazol-2-yl)benzene (TBPI) as the ET layer, achieved a high external quantum efficiency (η_{ext}) of 17.5% and a power efficiency (η_P) of 59.0 lm W⁻¹. For the same device configuration, the T3T-based device provided values of η_{ext} and η_P of 14.4% and 50.6 lm W⁻¹, resp.; the TST-based device provided values of 5.1% and 12.3 lm W⁻¹, resp. The superior performance of the T2T-based devices is ascribed to balanced charge recombination; the poor efficiencies of the TST-based devices are ascribed to its relatively low triplet energy (2.54 eV), which did not allow efficient confinement of the triplet excitons on the green phosphorescent emitter (PPy)2Ir(acac).
 IT 1201800-85-2P, 2,4,6-Tris(9,9'-spirobifluoren-2-yl)-1,3,5-triazine
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation and use as new electron transport-type host material for highly efficient green phosphorescent organic LEDs)
 RN 1201800-85-2 CAPLUS
 CN 1,3,5-Triazine, 2-(9,9'-spirobi[9H-fluoren]-2-yl)-4,6-bis(9,9'-spirobi[9H-fluoren]-3-yl)- (CA INDEX NAME)



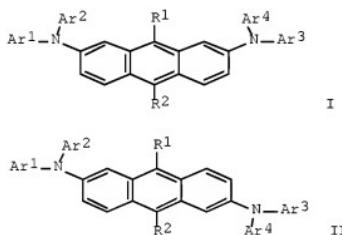
OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD
 (5 CITINGS)
 REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
 ACCESSION NUMBER: 2009:1073520 CAPLUS Full-text
 DOCUMENT NUMBER: 151:300937
 TITLE: Novel organic electroluminescent compounds based on anthracene derivatives and organic electroluminescent devices and solar cells using the same
 INVENTOR(S): Kim, Gi Sik; Cho, Yeong Jun; Kwon, Hyuck Ju; Kim, Bong Ok; Kim, Seong Min; Yoon, Seung Su
 PATENT ASSIGNEE(S): Gracel Display, Inc., S. Korea
 SOURCE: Eur. Pat. Appl., 356pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|----------|
| EP 2096108 | A1 | 20090902 | EP 2009-250537 | 20090227 |
| R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, RS | | | | |
| KR 2009093690 | A | 20090902 | KR 2008-19367 | 20080229 |
| US 20090256468 | A1 | 20091015 | US 2009-38054 | 20090227 |
| JP 2009215559 | A | 20090924 | JP 2009-83395 | 20090302 |
| CN 101613316 | A | 20091230 | CN 2009-10203961 | 20090302 |

PRIORITY APPLN. INFO.: KR 2008-19367 A 20080229
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 151:300937
 GI



AB The present invention relates to novel organic electroluminescent compds., and organic electroluminescent devices employing the same in an electroluminescent layer. Organic electroluminescent compds. are described by the general formula I and II (R1 and R2 = independently selected H, D, C1-60 alkyl, C2-60 alkenyl, C2-60 alkyanyl, C3-60 cycloalkyl, C4-60 tricycloalkyl, C7-60 bicycloalkyl, C6-60 aryl, C4-60 heteroaryl, 5- or 6-membered heterocycloalkyl containing ≥ 1 of N, O and S, spirobifluorenyl, halo, cyano, C1-60 alkoxy, tri(C1-60 alkyl)silyl, di(C1-60 alkyl)(C6-60 aryl)silyl, or tri(C6-60 aryl)silyl, where the alkyl, alkenyl, alkynyl, cycloalkyl, tricycloalkyl, bicycloalkyl, aryl, or heteroaryl groups may be further substituted by ≥ 1 of

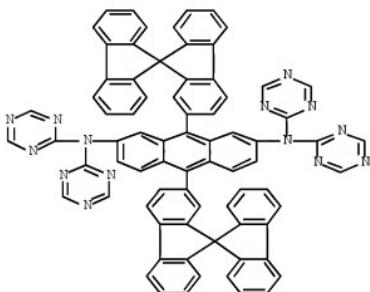
D, C1-60 alkyl, C1-60 alkoxy, halo, tri(C1-60 alkyl)silyl, di(C1-60 alkyl)(C6-60 aryl)silyl, tri(C6-60 aryl)silyl, cyano, C6-60 aryl, (C6-60)ar(C1-60)alkyl, and (C6-60)ar(C1-60)alkoxy; and Ar1-4 = independently selected 5- or 6-membered heteroaryls containing 1-4 heteroatom(s) selected from N, O and S, with the restriction that ≥2 of Ar1-4 represent pyridyl if a heteroaryl of Ar1-4 represents pyridyl). Organic electroluminescent devices and organic solar cells incorporating the compds. are also described. 3-Aminopyridine.

IT 1185929-77-4 1185929-87-6 1185930-00-0
 1185930-09-9 1185930-17-9 1185930-23-7
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 1185943-94-5

RL: MOA (Modifier or additive use); PRPH (Prophetic); TEM (Technical or engineered material use); USES (Uses)
 (organic electroluminescent compds. based on anthracene derivs. and organic electroluminescent devices and solar cells using them)

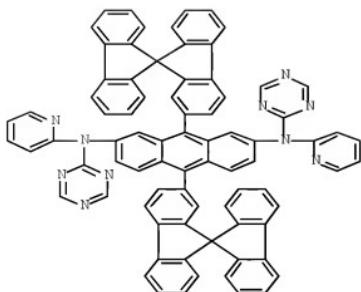
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CN INDEX NAME NOT YET ASSIGNED

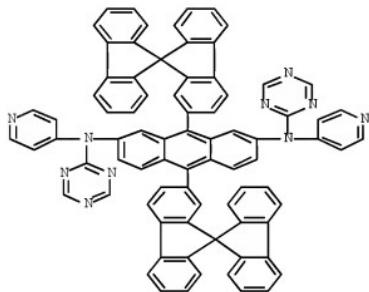


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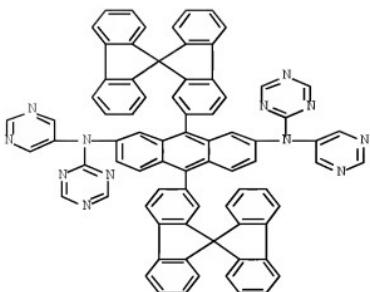
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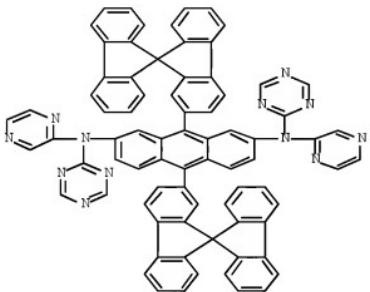
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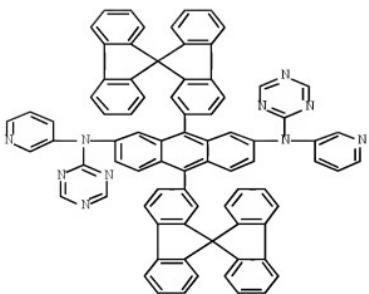
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CN INDEX NAME NOT YET ASSIGNED



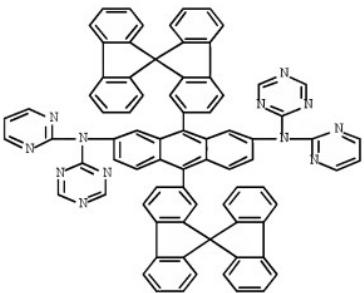
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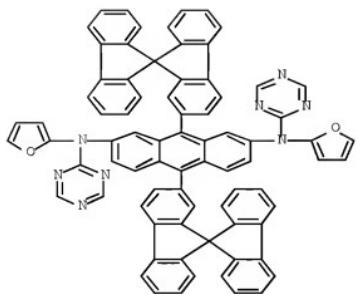
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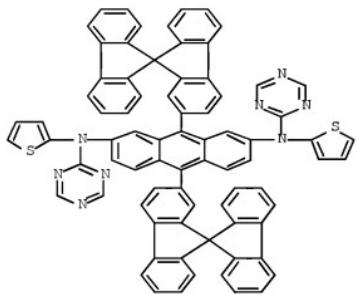
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CN INDEX NAME NOT YET ASSIGNED



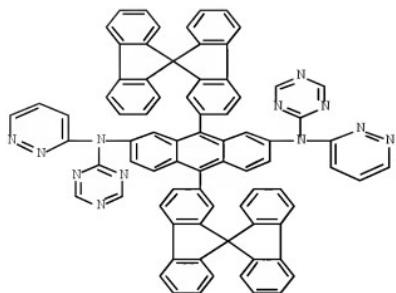
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CN INDEX NAME NOT YET ASSIGNED



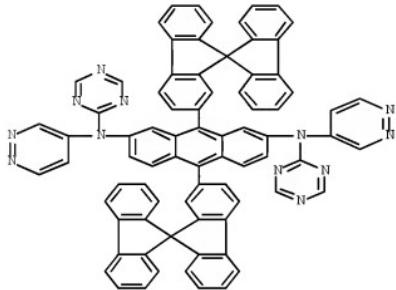
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CN INDEX NAME NOT YET ASSIGNED



RN 1185930-37-3 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

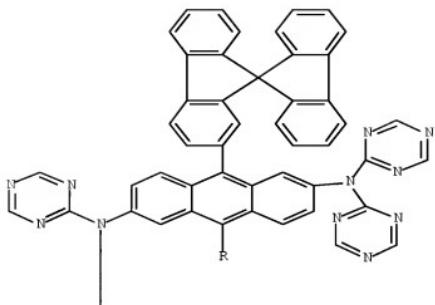


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CN INDEX NAME NOT YET ASSIGNED

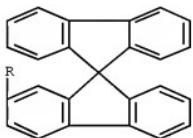


RN 1185943-39-8 CAPLUS
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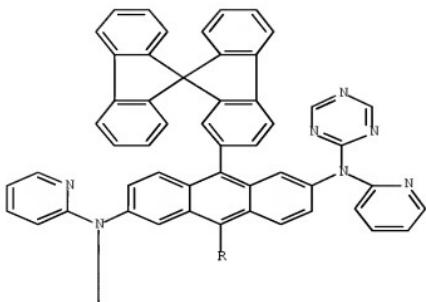


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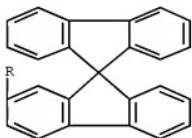


RN 1185943-49-0 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

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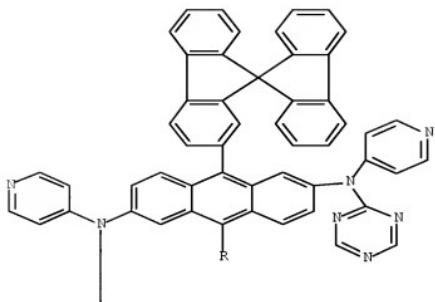


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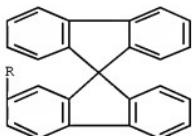


RN 1185943-58-1 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

PAGE 1-A

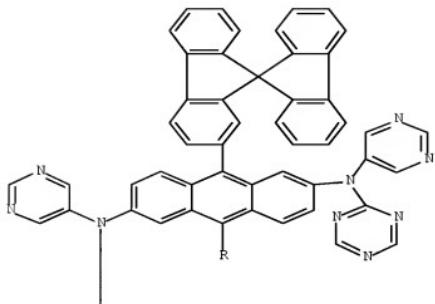


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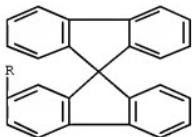


RN 1185943-66-1 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

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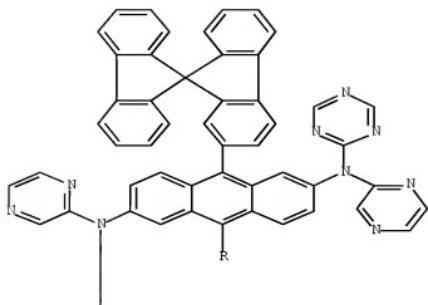


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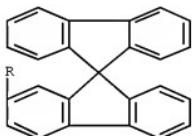


RN 1185943-73-0 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

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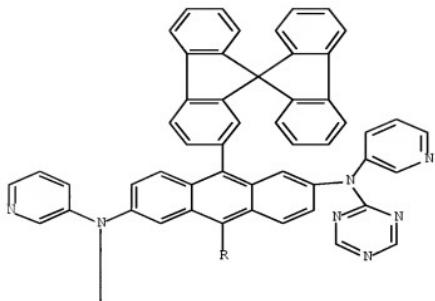


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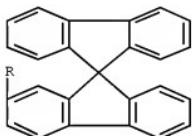


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CN INDEX NAME NOT YET ASSIGNED

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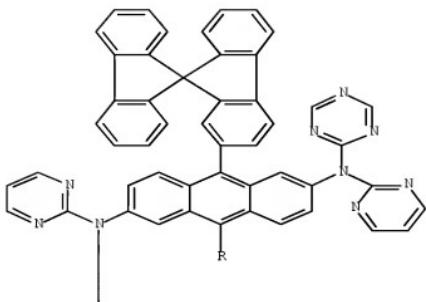


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CN INDEX NAME NOT YET ASSIGNED

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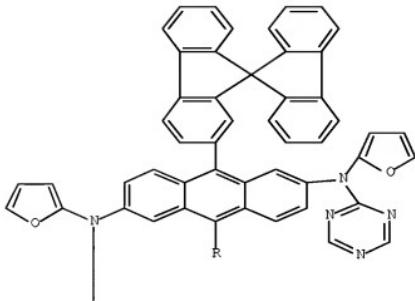


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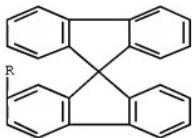


RN 1185943-88-7 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

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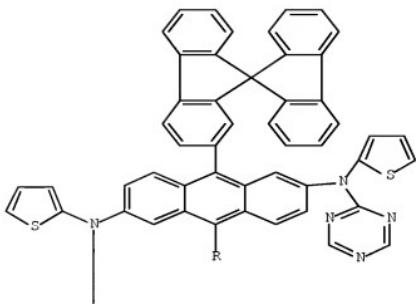


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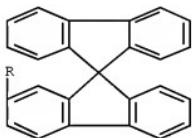


RN 1185943-91-2 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

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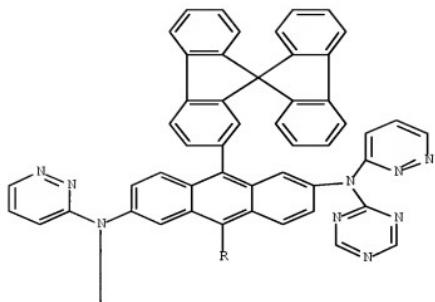


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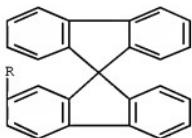


RN 1185943-93-4 CAPLUS
CN INDEX NAME NOT YET ASSIGNED

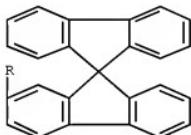
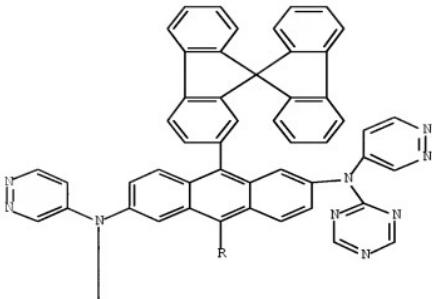
PAGE 1-A



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RN 1185943-94-5 CAPLUS
CN INDEX NAME NOT YET ASSIGNED



REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
 ACCESSION NUMBER: 2009:791541 CAPLUS Full-text
 DOCUMENT NUMBER: 151:1111416
 TITLE: Novel organic electroluminescent compounds and organic
 electroluminescent device using the same
 Eum, Sung Jin; Cho, Young Jun; Kwon, Hyuck Joo; Kim,
 Bong Ok; Kim, Sung Min; Yoon, Seung Soo
 INVENTOR(S):
 PATENT ASSIGNEE(S): Gracel Display Inc., S. Korea
 SOURCE: Eur. Pat. Appl., 263 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|------------|
| EP 2075309 | A2 | 20090701 | EP 2008-254194 | 20081231 |
| EP 2075309 | A3 | 20090923 | | |
| R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS | | | | |
| KR 2009073925 | A | 20090703 | KR 2007-142000 | 20071231 |
| KR 974562 | B1 | 20100806 | | |
| JP 2009215281 | A | 20090924 | JP 2008-336315 | 20081226 |
| CN 101508649 | A | 20090819 | CN 2008-10107489 | 20081231 |
| US 20100019657 | A1 | 20100128 | US 2008-319126 | 20081231 |
| PRIORITY APPLN. INFO.: | | | KR 2007-142000 | A 20071231 |

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 151:111416

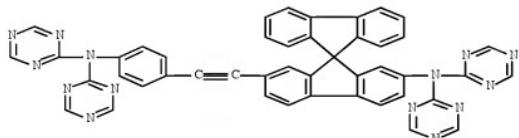
AB Organic electroluminescent compds. are described by the general formula (Ar5)(Ar6)N-Ar1-C.tplbond.C-Ar2-N(Ar3)(Ar4) (Ar1 and Ar2 = independently selected C6-60 arylene or C5-60 heteroarylene which may be further substituted by one or more substituent(s) selected from deuterium, linear or branched C1-60 alkyl and C6-60 aryl; Ar3-6 = independently selected linear or branched C1-60 alkyl, C3-60 cycloalkyl, 5- or 6-membered heterocycloalkyl containing one or more heteroatom(s) selected from N, O, and S, C6-60 aryl or C3-60 heteroaryl; Ar3 and Ar5, or Ar6 and Ar7, may be linked via C3-60 alkylene or C3-60 alkenylene with or without a fused ring to form an alicyclic ring, or a monocyclic or polycyclic aromatic ring; and the aryl or heteroaryl of Ar3-6 may be further substituted by one or more substituent(s) selected from deuterium, C6-60 aryl with or without linear or branched C1-60 alkyl or C6-60 aryl substituents, linear or branched C1-60 alkyl with or without halogen substituent(s), C1-30 alkoxy, C3-60 cycloalkyl, halo, cyano, tri(C1-30)alkylsilyl, di(C1-30)alkyl(C6-30)arylsilyl, and tri(C6-30)arylsilyl). Organic electroluminescent devices, including display devices, and organic solar cells employing the materials are also described.

IT 1167631-63-1

RL: MOA (Modifier or additive use); PRPH (Prophetic); TEM (Technical or engineered material use); USES (Uses)
 (electroluminescent di(triarylamine)ethyne derivs. and organic electroluminescent devices and solar cells using them)

RN 1167631-63-1 CAPLUS

CN INDEX NAME NOT YET ASSIGNED



TITLE: Organic electroluminescent element hole-blocking
 layers with six-membered ring unit-containing
 compounds and spirobifluorene derivatives and
 electronic devices using them
 INVENTOR(S): Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp
 PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|------------|
| WO 2005053055 | A1 | 20050609 | WO 2004-EP13314 | 20041124 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10356099 | A1 | 20050707 | DE 2003-10356099 | 20031127 |
| EP 1687857 | A1 | 20060809 | EP 2004-803245 | 20041124 |
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| CN 1954446 | A | 20070425 | CN 2004-80035289 | 20041124 |
| JP 2007520875 | T | 20070726 | JP 2006-540365 | 20041124 |
| AT 442675 | T | 20090915 | AT 2004-803245 | 20041124 |
| US 20070051944 | A1 | 20070308 | US 2006-580491 | 20060523 |
| KR 20061222874 | A | 20061130 | KR 2006-710343 | 20060526 |
| PRIORITY APPLN. INFO.: | | | DE 2003-10356099 | A 20031127 |
| | | | WO 2004-EP13314 | W 20041124 |

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:34908

AB Organic electroluminescent devices comprising an anode, a cathode, and ≥ 1 emitting layer, which consists of a matrix material which is doped with ≥ 1 phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with ≥ 1 triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

IT 853154-59-3P 853154-60-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic electroluminescent element with hole-blocking layers formed from

compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

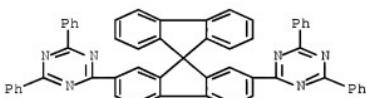
RN 853154-59-3 CAPLUS

CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 853154-60-6 CAPLUS

CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD
(9 CITINGS)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN

ACCESSION NUMBER: 2005:273912 CAPLUS [Full-text](#)

DOCUMENT NUMBER: 142:410919

TITLE: Molecular Tectonics. Porous Hydrogen-Bonded Networks Built from Derivatives of

2,2',7,7'-Tetraphenyl-9,9'-spirobi[9H-fluorene]

AUTHOR(S): Demers, Eric; Maris, Thierry; Wuest, James D.
CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,
Montreal, QC, H3C 3J7, Can.

SOURCE: Crystal Growth & Design (2005), 5(3), 1227-1235
CODEN: CGDEFU; ISSN: 1528-7483

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The cruciform shape of spirobifluorene disfavors close mol. packing, and more complex derivs. with multiple sites of hydrogen bonding are known to associate to form highly porous networks with significant space for the inclusion of guests. In principle, the porosity can be increased by introducing spacers between the spirobifluorene core and the peripheral sites of association. To test this strategy, compds. 2-3 (I) with multiple diaminotriazine groups attached to a tetraphenylspirobifluorene core were synthesized, and their behavior was compared with that of a model (4) (II) lacking the Ph spacers. As expected, extended spirobifluorenes 2-3 crystallized to produce open networks held together by hydrogen bonding of diaminotriazine groups; however, the porosities of these networks were lower (53% and 44%, resp.) than that of the network built from model 4 (60%). The decreased porosity arises largely because the added Ph spacers change the relative contributions of hydrogen bonding and aromatic interactions to the overall lattice energy of the crystals. It becomes advantageous to optimize aromatic interactions at the expense of hydrogen bonds, and crystallization therefore favors networks that permit closer mol. packing.

IT 850493-07-1P 850493-09-3P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(crystallog.; porous hydrogen-bonded networks built from derivs. of
2,2',7,7'-tetraphenyl-9,9'-spirobi[9H-fluorene])

RN 850493-07-1 CAPLUS

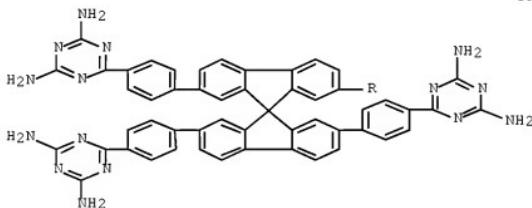
CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6'''-(9,9'-spirobi[9H-fluorene]-
2,2',7,7'-tetrayltetra-4,1-phenylene)tetraakis-, compd. with
sulfinylibis[methane], hydrate (2:14:3) (9CI) (CA INDEX NAME)

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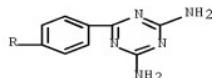
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CMF C61 H44 N20

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CRN 67-68-5
CMF C2 H6 O S

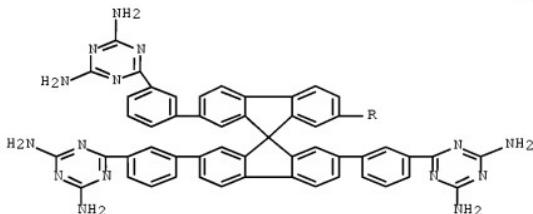


RN 850493-09-3 CAPLUS
CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6'''-(9,9'-spirobi[9H-fluorene]-2,2',7,7'-tetrayltetra-3,1-phenylene)tetraakis-, compd. with methanol and sulfinylbis[methane] (2:5:10) (9CI) (CA INDEX NAME)

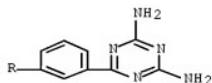
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CRN 850493-08-2
CMF C61 H44 N20

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CM 2

CRN 67-68-5
CMF C2 H6 O S



CM 3

CRN 67-56-1
CMF C H4 O



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REFERENCE COUNT: 129 THERE ARE 129 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2003:726758 CAPLUS Full-text
DOCUMENT NUMBER: 140:163418
TITLE: Molecular Tectonics. Porous Hydrogen-Bonded Networks Built from Derivatives of 9,9'-Spirobifluorene

AUTHOR(S): Fournier, Jean-Hugues; Maris, Thierry; Wuest, James D.
CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,
Montreal, QC, H3C 3J7, Can.

SOURCE: Journal of Organic Chemistry (2004), 69(6), 1762-1775
CODEN: JCCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

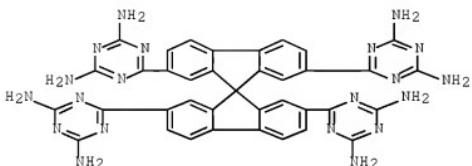
OTHER SOURCE(S): CASREACT 140:163418

AB Mols. with multiple sites that induce strong directional association tend to form open networks with significant vols. available for the inclusion of guests. Such mols. can be conveniently synthesized by grafting diverse sticky sites onto geometrically suitable cores. The characteristic inability of 9,9'-spirobifluorene to form close-packed crystals suggests that it should serve as a particularly effective core for the elaboration of mols. designed to form highly porous networks. To test this hypothesis, various new tetrasubstituted 9,9'-spirobifluorenes with hydrogen-bonding sites at the 3,3',6,6'-positions or 2,2',7,7'-positions were synthesized by multistep routes. Four of these compds. were crystallized, and their structures were determined by X-ray crystallog. In all cases, the compds. form extensively hydrogen-bonded networks with high porosity. In particular, 43% of the volume of crystals of 3,3',6,6'-tetrahydroxy-9,9'-spirobifluorene (28) is available for the inclusion of guests, whereas the porosity is only 28% in crystals of tetrakis(4-hydroxyphenyl)methane, a close model that lacks the spirobifluorene core. Similarly, the porosities found in crystals of 2,2',7,7'-tetra(acetamido)-9,9'-spirobifluorene (33) and 2,2',7,7'-tetrasubstituted tetrakis(diaminotriazine) 39 are 33% and 60%, resp. Moreover, the porosity of crystals of 2,2',7,7'-tetrasubstituted tetrakis(triaminotriazine) 40 is 75%, the highest value yet observed in crystals built from small mols. These observations demonstrate that a particularly effective strategy for engineering mols. able to form highly porous networks is to graft multiple

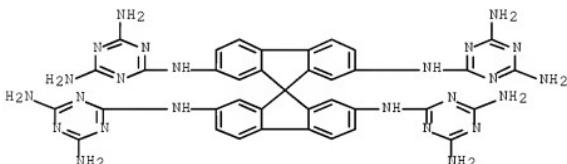
sticky sites onto spirobifluorenes or other cores intrinsically resistant to close packing.

IT 622011-42-1P 622011-43-2P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (crystal structure; porous hydrogen-bonded networks built from derivs.
 of 9,9'-spirobifluorene)

RN 622011-42-1 CAPLUS
 CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-
 2,2',7,7'-tetrayl)tetrakis- (9CI) (CA INDEX NAME)

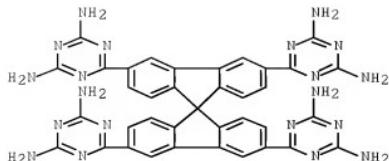


RN 622011-43-2 CAPLUS
 CN 9,9'-Spirobi[9H-fluorene]-2,2',7,7'-tetramine,
 N2,N2',N7,N7'-tetrakis(4,6-diamino-1,3,5-triazin-2-yl)- (CA INDEX NAME)



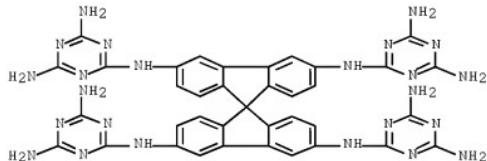
IT 622011-28-3P 622011-29-4P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (tecton; porous hydrogen-bonded networks built from derivs. of
 9,9'-spirobifluorene)

RN 622011-28-3 CAPLUS
 CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-
 3,3',6,6'-tetrayl)tetrakis- (9CI) (CA INDEX NAME)



RN 622011-29-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene]-3,3',6,6'-tetramine,
N3,N3',N6,N6'-tetrakis(4,6-diamino-1,3,5-triazin-2-yl)- (CA INDEX NAME)

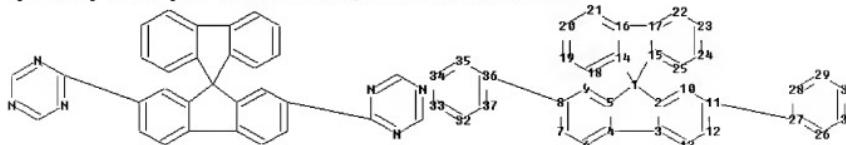


OS.CITING REF COUNT: 60 THERE ARE 60 CAPLUS RECORDS THAT CITE THIS RECORD (61 CITINGS)

REFERENCE COUNT: 126 THERE ARE 126 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

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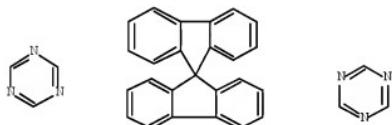
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normalized bonds :
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isolated ring systems :
containing 1 : 26 : 32 :

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L4 8 L3

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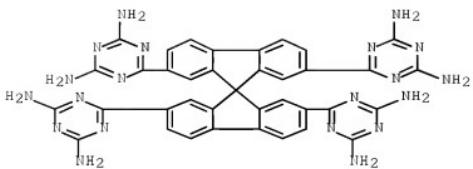
L4 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:726758 CAPLUS Full-text
DOCUMENT NUMBER: 140:163418
TITLE: Molecular Tectonics. Porous Hydrogen-Bonded Networks
Built from Derivatives of 9,9'-Spirobifluorene
AUTHOR(S): Fournier, Jean-Hugues; Maris, Thierry; Wuest, James D.
CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,
Montreal, QC, H3C 3J7, Can.
SOURCE: Journal of Organic Chemistry (2004), 69(6), 1762-1775
CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 140:163418
AB Mols. with multiple sites that induce strong directional association tend to form open networks with significant vols. available for the inclusion of guests. Such mols. can be conveniently synthesized by grafting diverse sticky sites onto geometrically suitable cores. The characteristic inability of 9,9'-spirobifluorene to form close-packed crystals suggests that it should serve as a particularly effective core for the elaboration of mols. designed to form highly porous networks. To test this hypothesis, various new tetrasubstituted 9,9'-spirobifluorenes with hydrogen-bonding sites at the 3,3',6,6'-positions or 2,2',7,7'-positions were synthesized by multistep routes. Four of these compds. were crystallized, and their structures were determined by X-ray crystallog. In all cases, the compds. form extensively hydrogen-bonded networks with high porosity. In particular, 43% of the volume of crystals of 3,3',6,6'-tetrahydroxy-9,9'-spirobifluorene (28) is available for the inclusion of guests, whereas the porosity is only 28% in crystals of tetrakis(4-hydroxyphenyl)methane, a close model that lacks the spirobifluorene core. Similarly, the porosities found in crystals of 2,2',7,7'-tetra(acetamido)-9,9'-spirobifluorene (33) and 2,2',7,7'-tetrasubstituted tetrakis(diaminotriazine) 39 are 33% and 60%, resp. Moreover, the porosity of crystals of 2,2',7,7'-tetrasubstituted tetrakis(triaminotriazine) 40 is 75%, the highest value yet observed in crystals built from small mols. These observations demonstrate that a particularly effective strategy for engineering mols. able to form highly porous networks is to graft multiple sticky sites onto spirobifluorenes or other cores intrinsically resistant to close packing.

IT 622011-42-1P 622011-43-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(crystal structure; porous hydrogen-bonded networks built from derivs.
of 9,9'-spirobifluorene)

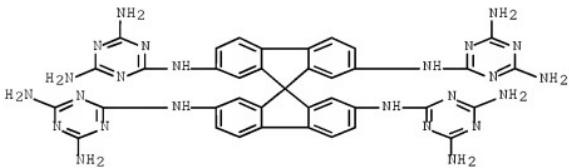
RN 622011-42-1 CAPLUS

CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-
2,2',7,7'-tetrail)tetrakis- (9CI) (CA INDEX NAME)



RN 622011-43-2 CAPLUS

CN 9,9'-Spirobi[9H-fluorene]-2,2',7,7'-tetramine,
N2,N2',N7,N7'-tetrakis(4,6-diamino-1,3,5-triazin-2-yl)- (CA INDEX NAME)

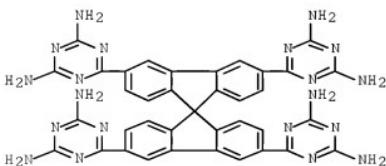


IT 622011-28-3P 622011-29-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(tecton; porous hydrogen-bonded networks built from derivs. of
9,9'-spirobifluorene)

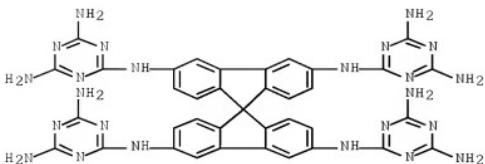
RN 622011-28-3 CAPLUS

CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-
3,3',6,6'-tetrayl)tetrakis- (9CI) (CA INDEX NAME)



RN 622011-29-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene]-3,3',6,6'-tetramine,
N3,N3',N6,N6'-tetrakis(4,6-diamino-1,3,5-triazin-2-yl)- (CA INDEX NAME)



OS.CITING REF COUNT: 64 THERE ARE 64 CAPLUS RECORDS THAT CITE THIS RECORD (65 CITINGS)
 REFERENCE COUNT: 126 THERE ARE 126 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

=> d ibib abs hitstr 7

L4 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2005:273912 CAPLUS [Full-text](#)
 DOCUMENT NUMBER: 142:41019
 TITLE: Molecular Tectonics. Porous Hydrogen-Bonded Networks Built from Derivatives of 2,2',7,7'-Tetraphenyl-9,9'-spirobi[9H-fluorene]
 AUTHOR(S): Demers, Eric; Maris, Thierry; Wuest, James D.
 CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,
 Montreal, QC, H3C 3J7, Can.
 SOURCE: Crystal Growth & Design (2005), 5(3), 1227-1235
 CODEN: CGDEFU; ISSN: 1528-7483
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The cruciform shape of spirobifluorene disfavors close mol. packing, and more complex derivs. with multiple sites of hydrogen bonding are known to associate to form highly porous networks with significant space for the inclusion of guests. In principle, the porosity can be increased by introducing spacers between the spirobifluorene core and the peripheral sites of association. To test this strategy, compds. 2-3 (I) with multiple diaminotriazine groups attached to a tetraphenylspirobifluorene core were synthesized, and their behavior was compared with that of a model (4) (II) lacking the Ph spacers. As expected, extended spirobifluorenes 2-3 crystallized to produce open networks held together by hydrogen bonding of diaminotriazine groups; however, the porosities of these networks were lower (53% and 44%, resp.) than that of the network built from model 4 (60%). The decreased porosity arises largely because the added Ph spacers change the relative contributions of hydrogen bonding and aromatic interactions to the overall lattice energy of the

crystals. It becomes advantageous to optimize aromatic interactions at the expense of hydrogen bonds, and crystallization therefore favors networks that permit closer mol. packing.

IT 850493-07-1P 850493-09-3P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(crystallog.; porous hydrogen-bonded networks built from derivs. of
2,2',7,7'-tetraphenyl-9,9'-spirobi[9H-fluorene])

RN 850493-07-1 CAPLUS

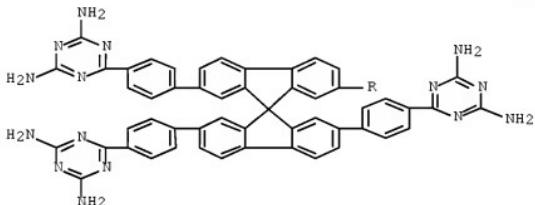
CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-
2,2',7,7'-tetrailtetra-4,1-phenylene)tetrakis-, compd. with
sulfinylbis[methane], hydrate (2:14:3) (9CI) (CA INDEX NAME)

CM 1

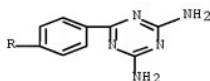
CRN 850493-06-0

CMF C61 H44 N20

PAGE 1-A



PAGE 2-A



CM 2

CRN 67-68-5

CMF C2 H6 O S



RN 850493-09-3 CAPLUS

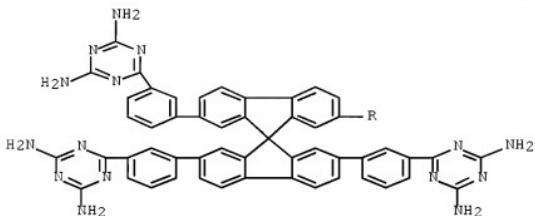
CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6''''-(9,9'-spirobi[9H-fluorene]-

2,2',7,7'-tetrailtetra-3,1-phenylene)tetraakis-, compd. with methanol and sulfinylbis[methane] (2:5:10) (9CI) (CA INDEX NAME)

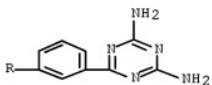
CM 1

CRN 850493-08-2
CMF C₆ H₄ N₂O

PAGE 1-A



PAGE 2-A



CM 2

CRN 67-68-5
CMF C₂ H₆ O S



CM 3

CRN 67-56-1
CMF C H₄ O

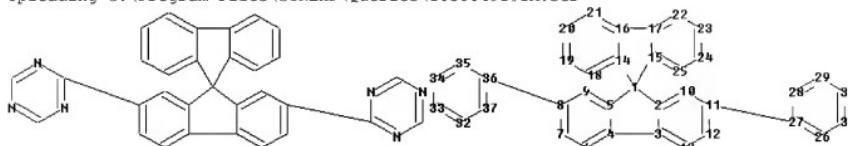


OS.CITING REF COUNT: 21
REFERENCE COUNT: 129

THERE ARE 21 CAPLUS RECORDS THAT CITE THIS RECORD (21 CITINGS)
THERE ARE 129 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

1

Uploading C:\Program Files\STNEEXP\Queries\10580491#1A.str



ring nodes :

Ring Nodes :
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28 29 30 31 32 33 34 35 36 37

chain bonds :

B-36 11-27

ring bonds :
 1-2 1-5 1-14 1-15 2-3 2-10 3-4 3-13 4-5 4-6 5-9 6-7 7-8 8-9 10-11
 11-12 12-13 14-16 14-18 15-17 15-25 16-17 16-21 17-22 18-19 19-20 20-21
 22-23 23-24 24-25
 26-27 26-31 27-28 28-29 29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

exact bonds.

exact bonds :

1-2 1-3 1-4 1-5 1-15 3-4 8-36 11-27 16-17
 normalized bonds :
 2-3 2-10 3-13 4-5 4-6 5-9 6-7 7-8 8-9 10-11 11-12 12-13 14-16 14-18
 15-17 15-25 16-21 17-22 18-19 19-20 20-21 22-23 23-24 24-25 26-27 26-31
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29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

isolated ring systems :

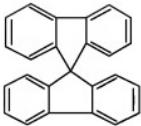
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11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
20:Atom 21:Atom
22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom 29:Atom 30:Atom
31:Atom 32:Atom
33:Atom 34:Atom 35:Atom 36:Atom 37:Atom

1.5 STRUCTURE UPLOADED

=> d 15

L5 HAS NO ANSWERS

L5 STB



Structure attributes must be viewed using STN Express query preparation.

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SAMPLE SEARCH INITIATED 18:55:45 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED -      19 TO ITERATE

100.0% PROCESSED      19 ITERATIONS          2 ANSWERS
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS:  ONLINE  **COMPLETE**
                        BATCH   **COMPLETE**
PROJECTED ITERATIONS:    119 TO      641
PROJECTED ANSWERS:       2 TO       124

L6      2 SEA SSS SAM L5

=> s 15 full
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FULL SCREEN SEARCH COMPLETED -      282 TO ITERATE

100.0% PROCESSED      282 ITERATIONS          42 ANSWERS
SEARCH TIME: 00.00.01

L7      42 SEA SSS FUL L5

=> s 17
L8      21 L7

=> s 18 and electrolumin?
     113772 ELECTROLUMIN?
L9      19 L8 AND ELECTROLUMIN?

=> d ibib abs hitstr 16-19

L9      ANSWER 16 OF 19  CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER:      2009:1312566  CAPLUS Full-text
DOCUMENT NUMBER:      152:86251
TITLE:                1,3,5-Triazine derivatives as new electron
                      transport-type host materials for highly efficient
                      green phosphorescent OLEDs
AUTHOR(S):             Chen, Hsiao-Fan; Yang, Shang-Jung; Tsai, Zhen-Han;
                      Hung, Wen-Yi; Wang, Ting-Chih; Wong, Ken-Tsung
CORPORATE SOURCE:      Department of Chemistry, National Taiwan University,
                      Taipei, 106, Taiwan
SOURCE:               Journal of Materials Chemistry (2009), 19(43),
                      8112-8118
```

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER:

Royal Society of Chemistry

DOCUMENT TYPE:

Journal

LANGUAGE:

English

OTHER SOURCE(S):

CASREACT 152:86251

AB Three star-shaped 1,3,5-triazine derivs., 2,4,6-tris(biphenyl-3-yl)-1,3,5-triazine (T2T), 2,4,6-tris(triphenyl-3-yl)-1,3,5-triazine (T3T), and 2,4,6-tris(9,9'-spirobifluorene-2-yl)-1,3,5-triazine (TST), were synthesized as new electron transport (ET)-type host materials for green phosphorescent organic light-emitting devices. The morphol., thermal, and photophys. properties and the electron mobilities of these ET-type host materials are influenced by the nature of the aryl substituents attached to the triazene core. The meta-meta linkage between the 1,3,5-triazine core and the peripheral aryl moieties in T2T and T3T limited the effective extension of their π conjugation, leading to high triplet energies of 2.80 and 2.69 eV, resp. Time-of-flight mobility measurements revealed the good electron mobilities for (each $> 10^{-4}$ cm² V⁻¹ s⁻¹), following the order T3T > TST > T2T. The device incorporating T2T as the host, doped with (PPy)2Ir(acac) and 1,3,5-tris(N-phenylbenzimidazol-2-yl)benzene (TPBI) as the ET layer, achieved a high external quantum efficiency (η_{ext}) of 17.5% and a power efficiency (η_{p}) of 59.0 lm W⁻¹. For the same device configuration, the T3T-based device provided values of η_{ext} and η_{p} of 14.4% and 50.6 lm W⁻¹, resp.; the TST-based device provided values of 5.1% and 12.3 lm W⁻¹, resp. The superior performance of the T2T-based devices is ascribed to balanced charge recombination; the poor efficiencies of the TST-based devices are ascribed to its relatively low triplet energy (2.54 eV), which did not allow efficient confinement of the triplet excitons on the green phosphorescent emitter (PPy)2Ir(acac).

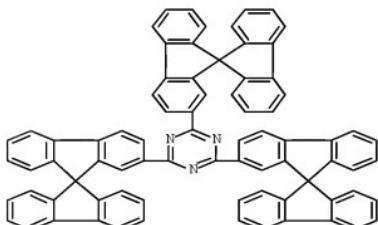
IT 1201800-85-2P, 2,4,6-Tris(9,9'-spirobifluoren-2-yl)-1,3,5-triazine

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation and use as new electron transport-type host material for

highly efficient green phosphorescent organic LEDs)

RN 1201800-85-2 CAPLUS

CN 1,3,5-Triazine, 2-(9,9'-spirobi[9H-fluoren]-2-yl)-4,6-bis(9,9'-spirobi[9H-fluoren]-3-yl)- (CA INDEX NAME)



OS.CITING REF COUNT:

8

THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD
(8 CITINGS)

REFERENCE COUNT:

47

THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L9 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 20091073520 CAPLUS [Full-text](#)
 DOCUMENT NUMBER: 151:300937
 TITLE: Novel organic electroluminescent compounds based on anthracene derivatives and organic electroluminescent devices and solar cells using the same
 INVENTOR(S): Kim, Gi Sik; Cho, Yeong Jun; Kwon, Hyuck Ju; Kim, Bong Ok; Kim, Seong Min; Yoon, Seung Su
 PATENT ASSIGNEE(S): Gracel Display, Inc., S. Korea
 SOURCE: Eur. Pat. Appl., 356pp.
 CODEN: EPXKDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

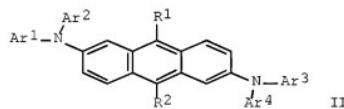
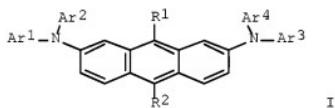
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
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| EP 2096108 | A1 | 20090902 | EP 2009-250537 | 20090227 |
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| KR 2009093690 | A | 20090902 | KR 2008-19367 | 20080229 |
| KR 1001384 | B1 | 20101214 | | |
| US 20090256468 | A1 | 20091015 | US 2009-380544 | 20090227 |
| JP 2009215559 | A | 20090924 | JP 2009-83395 | 20090302 |
| CN 101613316 | A | 20091230 | CN 2009-10203961 | 20090302 |

PRIORITY APPLN. INFO.: KR 2008-19367 A 20080229

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 151:300937

GI



AB The present invention relates to novel organic electroluminescent compds., and organic electroluminescent devices employing the same in an electroluminescent layer. Organic electroluminescent compds. are described by the general formula I and II (R1 and R2 = independently selected H, D, C1-60 alkyl, C2-60 alkenyl, C2-60 alkynyl, C3-60 cycloalkyl, C4-60 tricycloalkyl, C7-60 bicycloalkyl, C6-60 aryl, C4-60 heteroaryl, 5- or 6-membered heterocycloalkyl containing ≥1 of N, O and S, spirobifluorenyl, halo, cyano, C1-60 alkoxy, tri(C1-60 alkyl)silyl, di(C1-60 alkyl)(C6-60 aryl)silyl, or tri(C6-60

aryl)silyl, where the alkyl, alkenyl, alkynyl, cycloalkyl, tricycloalkyl, bicycloalkyl, aryl, or heteroaryl groups may be further substituted by ≥ 1 of D, C1-60 alkyl, C1-60 alkoxy, halo, tri(C1-60 alkyl)silyl, di(C1-60 alkyl)(C6-60 aryl)silyl, tri(C6-60 aryl)silyl, cyano, C6-60 aryl, (C6-60)ar(C1-60)alkoxy, and (C6-60)ar(C1-60)alkoxy; and Ar1-4 = independently selected 5- or 6-membered heteroaryl(s) containing 1-4 heteroatom(s) selected from N, O and S, with the restriction that ≥ 2 of Ar1-4 represent pyridyl if a heteroaryl of Ar1-4 represents pyridyl). Organic electroluminescent devices and organic solar cells incorporating the compds. are also described. 3-Aminopyridine.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2009:791541 CAPLUS Full-text
 DOCUMENT NUMBER: 151:111416
 TITLE: Novel organic electroluminescent compounds
 and organic electroluminescent device using
 the same
 INVENTOR(S): Eum, Sung Jin; Cho, Young Jun; Kwon, Hyuck Joo; Kim,
 Bong Ok; Kim, Sung Min; Yoon, Seung Soo
 PATENT ASSIGNEE(S): Gracel Display Inc., S. Korea
 SOURCE: Eur. Pat. Appl., 263 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|------------|
| EP 2075309 | A2 | 20090701 | EP 2008-254194 | 20081231 |
| EP 2075309 | A3 | 20090923 | | |
| R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS | | | | |
| KR 2009073925 | A | 20090703 | KR 2007-142000 | 20071231 |
| KR 974562 | B1 | 20100806 | | |
| JP 2009215281 | A | 20090924 | JP 2008-336315 | 20081226 |
| CN 101508649 | A | 20090819 | CN 2008-10107489 | 20081231 |
| US 20100019657 | A1 | 20100128 | US 2008-319126 | 20081231 |
| | | | KR 2007-142000 | A 20071231 |

PRIORITY APPLN. INFO.: KR 2007-142000 A 20071231
 ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 151:111416

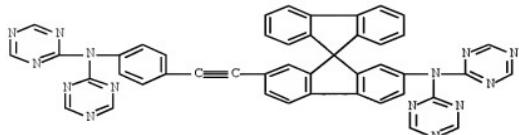
AB Organic electroluminescent compds. are described by the general formula (Ar5)(Ar6)-N-Ar1-C.tplbond.C-Ar2-N(Ar3)(Ar4) (Ar1 and Ar2 = independently selected C6-60 alylene or C5-60 heteroarylene which may be further substituted by one or more substituent(s) selected from deuterium, linear or branched C1-60 alkyl and C6-60 aryl; Ar3-6 = independently selected linear or branched C1-60 alkyl, C3-60 cycloalkyl, 5- or 6-membered heterocycloalkyl containing one or more heteroatom(s) selected from N, O, and S, C6-60 aryl or C3-60 heteroaryl; Ar3 and Ar5, or Ar6 and Ar7, may be linked via C3-60 alkylene or C3-60 alkenylene with or without a fused ring to form an alicyclic ring, or a monocyclic or polycyclic aromatic ring; and the aryl or heteroaryl of Ar3-6 may be further substituted by one or more substituent(s) selected from deuterium, C6-60 aryl with or without linear or branched C1-60 alkyl or C6-60 aryl substituents, linear or branched C1-60 alkyl with or without halogen substituent(s), C1-30 alkoxy, C3-60 cycloalkyl, halo, cyano, tri(C1-30)alkylsilyl, di(C1-30)alkyl(C6-30)arylsilyl, and tri(C6-30)arylsilyl). Organic electroluminescent devices, including display devices, and organic solar cells employing the materials are also described.

IT 1167631-63-1

RL: MOA (Modifier or additive use); PRPH (Prophetic); TEM (Technical or engineered material use); USES (Uses)
(electroluminescent di(tryarylamine)ethyne derivs. and organic electroluminescent devices and solar cells using them)

RN 1167631-63-1 CAPLUS

CN INDEX NAME NOT YET ASSIGNED



L9 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:493816 CAPLUS Full-text

DOCUMENT NUMBER: 143:34908

TITLE: Organic electroluminescent element

hole-blocking layers with six-membered ring unit-containing compounds and spirobifluorene derivatives and electronic devices using them

INVENTOR(S): Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp

PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany

SOURCE: PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2005053055 | A1 | 20050609 | WO 2004-EP13314 | 20041124 |
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| DE 10356099 | A1 | 20050707 | DE 2003-10356099 | 20031127 |
| EP 1687857 | A1 | 20060809 | EP 2004-803245 | 20041124 |
| EP 1687857 | B1 | 20090909 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS | | | | |
| CN 1954446 | A | 20070425 | CN 2004-80035289 | 20041124 |
| JP 2007520875 | T | 20070726 | JP 2006-540365 | 20041124 |

| | | | |
|------------------------|-------------|------------------|------------|
| AT 442675 | T 20090915 | AT 2004-803245 | 20041124 |
| US 20070051944 | A1 20070308 | US 2006-580491 | 20060523 |
| KR 2006122874 | A 20061130 | KR 2006-7010343 | 20060526 |
| PRIORITY APPLN. INFO.: | | DE 2003-10356099 | A 20031127 |
| | | WO 2004-EP13314 | W 20041124 |

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:34908

AB Organic electroluminescent devices comprising an anode, a cathode, and ≥ 1 emitting layer, which consists of a matrix material which is doped with ≥ 1 phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with ≥ 1 triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

IT 853154-59-3P 853154-60-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

RN 853154-59-3 CAPLUS

CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



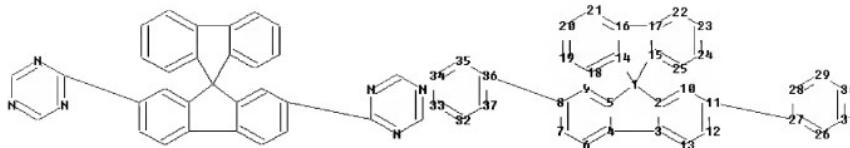
RN 853154-60-6 CAPLUS

CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



=>

Uploading C:\Program Files\STNEXP\Queries\10580491#1A.str



ring nodes :

| | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | | | | | | | | | |

chain bonds :

8-36 11-27

ring bonds :

| | | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-------|
| 1-2 | 1-5 | 1-14 | 1-15 | 2-3 | 2-10 | 3-4 | 3-13 | 4-5 | 4-6 | 5-9 | 6-7 | 7-8 | 8-9 | 10-11 |
| 11-12 | 12-13 | 14-16 | 14-18 | 15-17 | 15-25 | 16-17 | 16-21 | 17-22 | 18-19 | 19-20 | 20-21 | | | |

22-23 23-24 24-25

26-27 26-31 27-28 28-29 29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

exact bonds :

1-2 1-5 1-14 1-15 3-4 8-36 11-27 16-17

normalized bonds :

| | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2-3 | 2-10 | 3-13 | 4-5 | 4-6 | 5-9 | 6-7 | 7-8 | 8-9 | 10-11 | 11-12 | 12-13 | 14-16 | 14-18 |
| 15-17 | 15-25 | 16-21 | 17-22 | 18-19 | 19-20 | 20-21 | 22-23 | 23-24 | 24-25 | 26-27 | 26-31 | | |

27-28 28-29

29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

isolated ring systems :

containing 1 : 26 : 32 :

Match level :

| | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| 1:Atom | 2:Atom | 3:Atom | 4:Atom | 5:Atom | 6:Atom | 7:Atom | 8:Atom | 9:Atom | 10:Atom |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|

| | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| 11:Atom | 12:Atom | 13:Atom | 14:Atom | 15:Atom | 16:Atom | 17:Atom | 18:Atom | 19:Atom | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|

20:Atom 21:Atom

| | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| 22:Atom | 23:Atom | 24:Atom | 25:Atom | 26:Atom | 27:Atom | 28:Atom | 29:Atom | 30:Atom | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|

31:Atom 32:Atom

| | | | | | | | | | |
|---------|---------|---------|---------|---------|--|--|--|--|--|
| 33:Atom | 34:Atom | 35:Atom | 36:Atom | 37:Atom | | | | | |
|---------|---------|---------|---------|---------|--|--|--|--|--|

L10 STRUCTURE UPLOADED

=> d 110

L10 HAS NO ANSWERS

L10 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l10
SAMPLE SEARCH INITIATED 18:58:12 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED - 299 TO ITERATE

100.0% PROCESSED 299 ITERATIONS 50 ANSWERS
INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
BATCH **COMPLETE**
PROJECTED ITERATIONS: 4943 TO 7017
PROJECTED ANSWERS: 2441 TO 3957

L11 50 SEA SSS SAM L10

=> s l10 full
FULL SEARCH INITIATED 18:58:21 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 5998 TO ITERATE

100.0% PROCESSED 5998 ITERATIONS 2973 ANSWERS
SEARCH TIME: 00.00.01

L12 2973 SEA SSS FUL L10

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l12
L13 1253 L12

=> s l13 and indenofluoren?
147 INDENOFLUOREN?
L14 8 L13 AND INDENOFLUOREN?

=> d ibib abs hitstr 8

L14 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 20051239310 CAPLUS Full-text
DOCUMENT NUMBER: 142:308097
TITLE: Electronic devices comprising an organic conductor and semiconductor as well as an intermediate buffer layer made of a crosslinked polymer
INVENTOR(S): Mueller, David Christoph; Reckefuss, Nina; Meerholz, Klaus; Meyer, Frank; Scheurich, Rene; Falcou, Aurelie
PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany
SOURCE: PCT Int. Appl., 28 pp.
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2005024971 | A1 | 20050317 | WO 2004-EP9903 | 20040904 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, | | | | |

GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
 LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG

DE 10340711 A1 20050407 DE 2003-10340711 20030904

EP 1661191 A1 20060531 EP 2004-764854 20040904

EP 1661191 B1 20081217

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

CN 1849717 A 20061018 CN 2004-80025368 20040904

JP 2007504657 T 20070301 JP 2006-525129 20040904

AT 418161 T 20090115 AT 2004-764854 20040904

US 20060251886 A1 20061109 US 2006-570372 20060321

PRIORITY APPLN. INFO.: DE 2003-10340711 A 20030904
 WO 2004-EP9903 W 20040904

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

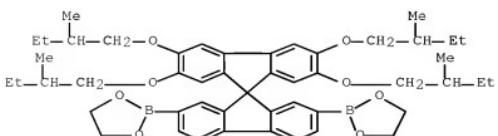
AB The invention relates to electronic devices whose electronic properties can surprisingly be improved to a significant degree by inserting at least one crosslinkable polymeric buffer layer, preferably a cationically crosslinkable polymeric buffer layer, between the conductive doped polymer and the organic semiconductor layer. Particularly good properties are obtained with a buffer layer in which crosslinking is thermally induced, i.e. by raising the temperature to 50-250°. Alternatively, crosslinking can be radiation-induced by adding a photoacid. Also, such a buffer layer can be advantageously applied by means of printing techniques, especially ink-jet printing, as the ideal temperature for the thermal treatment is independent of the glass transition temperature of the material. This avoids having to rely on material that has a low mol. weight, making it possible to apply the layer by means of printing techniques. The next layer (the organic semiconductor layer) can also be applied with the aid of different printing techniques, particularly ink-jet printing, because the buffer layer is rendered insol. by the crosslinking process, thus preventing the buffer layer from solubilizing thereafter.

IT 396123-43-6D, polymers with indenofluorene and phenylamine derivs.

RL: DEV (Device component use); USES (Uses)
 (electronic devices comprising an organic conductor and semiconductor as well as an intermediate buffer layer made of a crosslinked polymer)

RN 396123-43-6 CAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-[2',3',6',7'-tetrakis(2-methylbutoxy)-9,9'-spirobi[9H-fluorene]-2,7-diyl]bis- (CA INDEX NAME)



OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD
(11 CITINGS)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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FILE 'REGISTRY' ENTERED AT 18:52:31 ON 27 JAN 2011

L1 STRUCTURE uploaded
L2 1 S L1
L3 34 S L1 FULL

FILE 'CPLUS' ENTERED AT 18:53:25 ON 27 JAN 2011

L4 8 S L3

FILE 'STNGUIDE' ENTERED AT 18:54:46 ON 27 JAN 2011

FILE 'REGISTRY' ENTERED AT 18:55:21 ON 27 JAN 2011
L5 STRUCTURE uploaded
L6 2 S L5
L7 42 S L5 FULL

FILE 'CPLUS' ENTERED AT 18:55:57 ON 27 JAN 2011

L8 21 S L7
L9 19 S L8 AND ELECTROLUMIN?

FILE 'STNGUIDE' ENTERED AT 18:57:09 ON 27 JAN 2011

FILE 'REGISTRY' ENTERED AT 18:57:47 ON 27 JAN 2011
L10 STRUCTURE uploaded
L11 50 S L10
L12 2973 S L10 FULL

FILE 'CPLUS' ENTERED AT 18:58:26 ON 27 JAN 2011

L13 1253 S L12
L14 8 S L13 AND INDENOFLUOREN?

=> s 13 and tetraaryl methane
1045677 13
45 TETRAARYLMETHANE
22 TETRAARYLMETHANES
61 TETRAARYLMETHANE
(TETRAARYLMETHANE OR TETRAARYLMETHANES)
L15 5 13 AND TETRAARYLMETHANE

=> d ibib abs hitstr 5

L15 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1951:6136 CAPLUS Full-text
DOCUMENT NUMBER: 45:6136
ORIGINAL REFERENCE NO.: 45:1079g-i,1080a
TITLE: Hindered tetraaryl methanes
AUTHOR(S): Adams, Roger; Campbell, John B.
CORPORATE SOURCE: Univ. of Illinois, Urbana
SOURCE: Journal of the American Chemical Society (1950), 72,
153-5
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE:

Journal

LANGUAGE:

Unavailable

AB 9-Fluorenone (210 g.) in 600 cc. C₆H₆ was added to the Grignard reagent from 42 g. Mg and 300 g. o-BrC₆H₄Me, the mixture refluxed 9 h., decomposed with 500 cc. 20% HCl, the organic layer separated, the solvents removed, and the residue steam-distilled, yielding 249 g. 9-hydroxy-9-o-tolylfluorene (I), m. 120.5-2° (m.p.s. corrected) (from 90-110° petr. ether). I (1 g.), 1.0 g. PhOH, and 1.75 g. concentrated H₂SO₄ in 12 cc. AcOH allowed to stand 24 h. at room temperature yielded 1.05 g. p-(biphenylene-o-tolylmethyl)phenol, m. 139-41°. I (0.70 g.), 1 g. PhNH₂, and 1 g. concentrated HCl in 4 cc. AcOH refluxed 3 h. yielded 0.67 g. p-(biphenylene-o-tolylmethyl)aniline, m. 152.0-3.5° (from petr. ether). Condensation of I with o-toluidine yielded 70% (4-biphenylene-o-tolylmethyl)-2-methylaniline (II), m. 172-4°. II (11.0 g.) and 3.05 succinic anhydride in 90 cc. dry C₆H₆ refluxed 20 min. yielded 13.0 g. of the N-succinyl derivative, m. 169-70° (decomposition). II (2.50 g.) in 75 cc. EtOAc and 1.561 g. d-camphorsulfonic acid in 75 cc. hot EtOAc yielded 3.87 g. salt which softened at 195° and decomposed 215-27°; when the salt was hydrolyzed with 5% EtOH-NaOH (1:1), inactive II, m. 172-4°, was recovered. Condensation of I with p-xylylidine yielded 66% 4-(biphenylene-o-tolylmethyl)-2,5-dimethylaniline (III), m. 188-9°. III (2.34 g.) and 0.92 g. o-C₆H₄(CO)20 in 150 cc. dry C₆H₆ refluxed 30 min. yielded 2.59 g. the N-phthaloyl derivative (IV), m.p. indefinite. Equal amts. of III and o-C₆H₄(CO)20 heated at 180° for 30 min. yielded 90% N-[4-(biphenylene-o-tolylmethyl)-2,5-dimethylphenyl]phthalimide, m. 232-4° (from absolute EtOH-C₆H₆ 3:1). Quinine salt of IV, decompose 150-60° (evolution of water), [α]25D -67°; it did not effect a resolution of IV. III (3.00 g.) and 1.45 g. d-camphoric anhydride melted and kept 15 min. at 150° yielded 2.75 g. N-camphoryl derivative, decompose 155-85° (foaming), [α]25D 16°. OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
(1 CITINGS)

=> s 113 and electrolumin?

3 ELCTROLUMIN?

L16 0 L13 AND ELCTROLUMIN?

=> s 113 and electrolumin?

113772 ELECTROLUMIN?

L17 739 L13 AND ELECTROLUMIN?

=> s 117 and triptycene

822 TRIPTYCENE

211 TRIPTYCENES

867 TRIPTYCENE

(TRIPTYCENE OR TRIPTYCENES)

L18 2 L17 AND TRIPTYCENE

=> d ibib abs hitstr 2

L18 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1999:237505 CAPLUS Full-text

DOCUMENT NUMBER: 130:344493

TITLE: Novel amorphous molecular materials for organic light-emitting devices

AUTHOR(S): Weinfurtner, Karl-Heinz; Weissortel, Frank; Harmgarth, Gabriele; Salbeck, Josef

CORPORATE SOURCE: Max-Planck-Institut fur Polymerforschung, Mainz, D-55128, Germany

SOURCE:

Proceedings of SPIE-The International Society for
Optical Engineering (1998), 3476(Organic
Light-Emitting Materials and Devices II), 40-48
CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER:

SPIE-The International Society for Optical Engineering
Journal

DOCUMENT TYPE:

English

LANGUAGE:

AB New structures for blue light emitting amorphous materials, based on an extended spiro-structural concept are reported. The chromophores are essentially based on p-oligophenyl chromophores, with further improved optical and morphol. properties. The photoluminescence quantum efficiency of the blue emitter in amorphous solid state reach .apprx.70%. New oxadiazole based electron transport materials are presented, where triptycenes were used as new structural motif to increase the morphol. stability and preserve the electronic properties of the parent compound Both, the emitting material and the electron transport materials can be processed into thin amorphous films with high morphol. stability by vapor deposition as well as by spin-coating from soins. in organic solvents.

IT 171408-92-7 224456-30-8

RL: PRP (Properties)

(novel amorphous mol. materials for organic light-emitting devices with luminescence, visible spectra and structure)

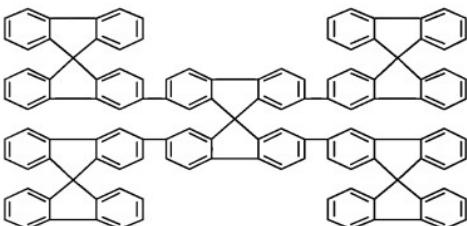
RN 171408-92-7 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetraphenyl- (CA INDEX NAME)



RN 224456-30-8 CAPLUS

CN 3,2':2'',3''''-Ter-9,9'-spirobi[9H-fluorene],
7'',7'''-bis(9,9'-spirobi[9H-fluoren]-3-yl)- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT:

27

THERE ARE 27 CAPLUS RECORDS THAT CITE THIS
RECORD (27 CITINGS)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L18 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:331637 CAPLUS Full-text
DOCUMENT NUMBER: 140:365374
TITLE: Organic light-emitting diode devices with improved operational stability
INVENTOR(S): Jarikov, Viktor V.
PATENT ASSIGNEE(S): Eastman Kodak Company, USA
SOURCE: U.S. Pat. Appl. Publ., 108 pp., Cont.-in-part of U.S. Ser. No. 131,801, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------|------|----------|-----------------|----------|
| US 20040076853 | A1 | 20040422 | US 2003-634324 | 20030805 |
| US 7183010 | B2 | 20070227 | | |
| TW 314947 | B | 20090921 | TW 2003-105220 | 20030311 |
| JP 2003347058 | A | 20031205 | JP 2003-118497 | 20030423 |
| CN 1453886 | A | 20031105 | CN 2003-124026 | 20030424 |
| CN 100452475 | C | 20090114 | | |

PRIORITY APPLN. INFO.: US 2002-131801 B2 20020424

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

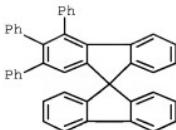
OTHER SOURCE(S): MARPAT 140:365374

AB Organic light-emitting devices which comprise a substrate; an anode and a cathode disposed over the substrate; a luminescent layer disposed between the anode and the cathode are described in which the luminescent layer includes a host and ≥ 1 dopant; the host including a solid organic material comprising a mixture of ≥ 2 components including a first component that is an organic compound capable of transporting either electrons and/or holes and of forming both monomer state and an aggregate state and a second component of that is an organic compound that upon mixing with the first host component is capable of forming a continuous and substantially pin-hole-free layer, while the dopant is selected to produce light from the light-emitting device. The first component is capable of forming an aggregate state either in the ground electronic state or in an excited electronic state that results in a different absorption or emission spectrum or both relative to the absorption or emission spectrum or both of the monomer state, resp., or of forming an aggregate state whose presence results in a quantum yield of luminescence of the monomer state being different relative to the quantum yield of luminescence of the monomer state in the absence of the aggregate state. The aggregate state may be crystalline

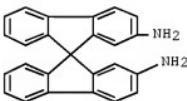
IT 22815-17-4, 2,3,4-Triphenyl-9,9'-spirobifluorene
67665-45-6, 9,9'-Spirobi(9H-fluorene)-2,2'-diamine
67665-48-9, 9,9'-Spirobi(9H-fluorene)-2,2'-dicarbonitrile
171408-92-7 462104-51-4 473906-55-7
497157-27-4 503307-40-2 503307-41-3
RL: DEV (Device component use); USES (Uses)
(organic light-emitting diode devices using luminescent mixts.)

RN 22815-17-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2',3',4'-triphenyl- (CA INDEX NAME)



RN 67665-45-6 CAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,2'-diamine (CA INDEX NAME)



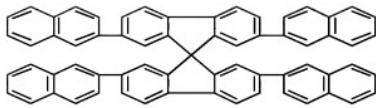
RN 67665-48-9 CAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,2'-dicarbonitrile (CA INDEX NAME)



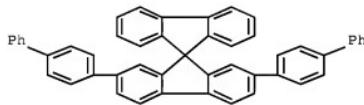
RN 171408-92-7 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetraphenyl- (CA INDEX NAME)



RN 462104-51-4 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-naphthalenyl- (CA INDEX NAME)



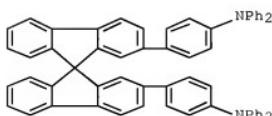
RN 473906-55-7 CAPLUS
 CN 9,9'-Spirobi[9H-fluorene], 2',7'-bis((1,1'-biphenyl)-4-yl)- (CA INDEX NAME)



RN 497157-27-4 CAPLUS
 CN 9,9'-Spirobi[9H-fluorene]-2,7-diamine,
 2',7'-bis((1,1'-biphenyl)-4-yl)-N2,N7,N7-tetraphenyl- (CA INDEX NAME)

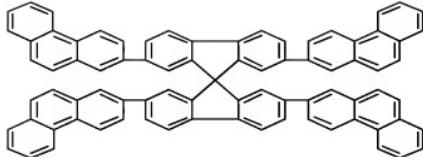


RN 503307-40-2 CAPLUS
 CN Benzenamine, 4,4'-(9,9'-spirobi[9H-fluorene]-2,2'-diyl)bis[N,N-diphenyl-
 (CA INDEX NAME)



RN 503307-41-3 CAPLUS
 CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-phenanthrenyl- (CA INDEX

NAME)



OS.CITING REF COUNT: 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS
RECORD (17 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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(FILE 'HOME' ENTERED AT 18:51:58 ON 27 JAN 2011)

FILE 'REGISTRY' ENTERED AT 18:52:31 ON 27 JAN 2011

L1 STRUCTURE uploaded
L2 1 S L1
L3 34 S L1 FULL

FILE 'CAPLUS' ENTERED AT 18:53:25 ON 27 JAN 2011

L4 8 S L3

FILE 'STNGUIDE' ENTERED AT 18:54:46 ON 27 JAN 2011

FILE 'REGISTRY' ENTERED AT 18:55:21 ON 27 JAN 2011

L5 STRUCTURE uploaded
L6 2 S L5
L7 42 S L5 FULL

FILE 'CAPLUS' ENTERED AT 18:55:57 ON 27 JAN 2011

L8 21 S L7
L9 19 S L8 AND ELECTROLUMIN?

FILE 'STNGUIDE' ENTERED AT 18:57:09 ON 27 JAN 2011

FILE 'REGISTRY' ENTERED AT 18:57:47 ON 27 JAN 2011

L10 STRUCTURE uploaded
L11 50 S L10
L12 2973 S L10 FULL

FILE 'CAPLUS' ENTERED AT 18:58:26 ON 27 JAN 2011

L13 1253 S L12
L14 8 S L13 AND INDENOFLUOREN?
L15 5 S 13 AND TETRAARYLMETHANE
L16 0 S L13 AND ELECTROLUMIN?
L17 739 S L13 AND ELECTROLUMIN?
L18 2 S L17 AND TRIPYCCENE

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s 117 and pyridazine?

10950 PYRIDAZINE?

L19 4 L17 AND PYRIDAZINE?

=> d ibib abs hitstr 4

L19 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:331637 CAPLUS Full-text
DOCUMENT NUMBER: 140:365374
TITLE: Organic light-emitting diode devices with improved operational stability
INVENTOR(S): Jarikov, Viktor V.
PATENT ASSIGNEE(S): Eastman Kodak Company, USA
SOURCE: U.S. Pat. Appl. Publ., 108 pp., Cont.-in-part of U.S. Ser. No. 131,801, abandoned.
CODEN: USXXC0
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------|------|----------|-----------------|----------|
| US 20040076853 | A1 | 20040422 | US 2003-634324 | 20030805 |
| US 7183010 | B2 | 20070227 | | |
| TW 314947 | B | 20090921 | TW 2003-105220 | 20030311 |
| JP 2003347058 | A | 20031205 | JP 2003-118497 | 20030423 |
| CN 1453886 | A | 20031105 | CN 2003-124026 | 20030424 |
| CN 100452475 | C | 20090114 | | |

PRIORITY APPLN. INFO.: US 2002-131801 B2 20020424

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

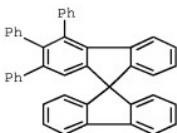
OTHER SOURCE(S): MARPAT 140:365374

AB Organic light-emitting devices which comprise a substrate; an anode and a cathode disposed over the substrate; a luminescent layer disposed between the anode and the cathode are described in which the luminescent layer includes a host and ≥ 1 dopant; the host including a solid organic material comprising a mixture of ≥ 2 components including a first component that is an organic compound capable of transporting either electrons and/or holes and of forming both monomer state and an aggregate state and a second component of that is an organic compound that upon mixing with the first host component is capable of forming a continuous and substantially pin-hole-free layer, while the dopant of is selected to produce light from the light-emitting device. The first component is capable of forming an aggregate state either in the ground electronic state or in an excited electronic state that results in a different absorption or emission spectrum or both relative to the absorption or emission spectrum or both of the monomer state, resp., or of forming an aggregate state whose presence results in a quantum yield of luminescence of the monomer state being different relative to the quantum yield of luminescence of the monomer state in the absence of the aggregate state. The aggregate state may be crystalline

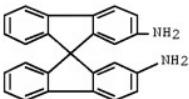
IT 22815-17-4, 2,3,4-Triphenyl-9,9'-spirobifluorene
67665-45-6, 9,9'-Spirobi(9H-fluorene)-2,2'-diamine
67665-48-9, 9,9'-Spirobi(9H-fluorene)-2,2'-dicarbonitrile
171408-92-7 462104-51-4 473906-55-7
497157-27-4 503307-40-2 503307-41-3

RL: DEV (Device component use); USES (Uses)
(organic light-emitting diode devices using luminescent mixts.)

RN 22815-17-4 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2',3',4'-triphenyl- (CA INDEX NAME)



RN 67665-45-6 CAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,2'-diamine (CA INDEX NAME)



RN 67665-48-9 CAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,2'-dicarbonitrile (CA INDEX NAME)

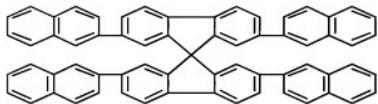


RN 171408-92-7 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetraphenyl- (CA INDEX NAME)



RN 462104-51-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-naphthalenyl- (CA INDEX
NAME)



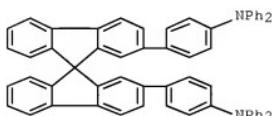
RN 473906-55-7 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2',7'-bis([1,1'-biphenyl]-4-yl)- (CA INDEX
NAME)



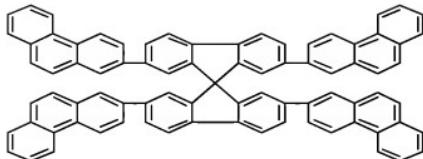
RN 497157-27-4 CAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,7-diamine,
2',7'-bis([1,1'-biphenyl]-4-yl)-N2,N2,N7,N7-tetraphenyl- (CA INDEX NAME)



RN 503307-40-2 CAPLUS
CN Benzenamine, 4,4'-(9,9'-spirobi[9H-fluorene]-2,2'-diyl)bis[N,N-diphenyl-
(CA INDEX NAME)



RN 503307-41-3 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-phenanthrenyl- (CA INDEX
NAME)



OS.CITING REF COUNT: 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d ibib abs hitstr 3

L19 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2005:493816 CAPLUS Full-text
DOCUMENT NUMBER: 143:34908
TITLE: Organic electroluminescent element
hole-blocking layers with six-membered ring
unit-containing compounds and spirobifluorene
derivatives and electronic devices using them
INVENTOR(S): Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp
PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|------------------|----------|
| WO 2005053055 | A1 | 20050609 | WO 2004-EP13314 | 20041124 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GB, GH, GM, HR, HU, ID, IL, IN, IS, JP, KB, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10356099 | A1 | 20050707 | DE 2003-10356099 | 20031127 |
| EP 1687857 | A1 | 20060809 | EP 2004-803245 | 20041124 |

EP 1687857 B1 20090909
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS
 CN 1954446 A 20070425 CN 2004-80035289 20041124
 JP 2007520875 T 20070726 JP 2006-540365 20041124
 AT 442675 T 20090915 AT 2004-803245 20041124
 US 20070051944 A1 20070308 US 2006-580491 20060523
 KR 2006122874 A 20061130 KR 2006-7010343 20060526
 PRIORITY APPLN. INFO.: DE 2003-10356099 A 20031127
 WO 2004-EP13314 W 20041124

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:34908

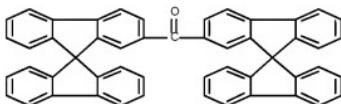
AB Organic electroluminescent devices comprising an anode, a cathode, and ≥ 1 emitting layer, which consists of a matrix material which is doped with ≥ 1 phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with ≥ 1 triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

IT 782504-07-8

RL: DEV (Device component use); USES (Uses)
 (organic electroluminescent element with hole-blocking layers
 formed from compds. including six-membered rings and spirobifluorene
 derivs. and electronic devices using them)

RN 782504-07-8 CAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



IT 853154-59-3P 853154-60-6P 853154-61-7P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (organic electroluminescent element with hole-blocking layers
 formed from compds. including six-membered rings and spirobifluorene
 derivs. and electronic devices using them)

RN 853154-59-3 CAPLUS

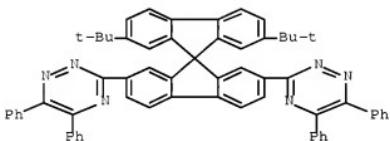
CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluoren]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 853154-60-6 CAPLUS
 CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl-1,2,4-triazine] (CA INDEX NAME)



RN 853154-61-7 CAPLUS
 CN 1,2,4-Triazine, 3,3'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[5,6-diphenyl-1,2,4-triazine] (CA INDEX NAME)



IT 463944-32-3 853154-62-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (organic electroluminescent element with hole-blocking layers
 formed from compds. including six-membered rings and spirobifluorene
 derivs. and electronic devices using them)
 RN 463944-32-3 CAPLUS
 CN 1,3,2-Dioxaborolane, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl-1,2,4-triazine] (CA INDEX NAME)



RN 853154-62-8 CAPLUS
 CN 1,3,2-Dioxaborolane, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis- (9CI)
 (CA INDEX NAME)



OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD
 (9 CITINGS)
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s l17 and pyrimidine?
 78707 PYRIMIDINE?
 L20 11 L17 AND PYRIMIDINE?

=> d ibib abs hitstr 10-11

L20 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2004:331637 CAPLUS Full-text
 DOCUMENT NUMBER: 140:365374
 TITLE: Organic light-emitting diode devices with improved
 operational stability
 INVENTOR(S): Jarikov, Viktor V.
 PATENT ASSIGNEE(S): Eastman Kodak Company, USA
 SOURCE: U.S. Pat. Appl. Publ., 108 pp., Cont.-in-part of U.S.
 Ser. No. 131,801, abandoned.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------|------|----------|-----------------|----------|
| US 20040076853 | A1 | 20040422 | US 2003-634324 | 20030805 |
| US 7183010 | B2 | 20070227 | | |
| TW 314947 | B | 20090921 | TW 2003-105220 | 20030311 |
| JP 2003347058 | A | 20031205 | JP 2003-118497 | 20030423 |
| CN 1453886 | A | 20031105 | CN 2003-124026 | 20030424 |

CN 100452475

C 20090114

US 2002-131801

B2 20020424

PRIORITY APPLN. INFO.:

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 140:365374

AB Organic light-emitting devices which comprise a substrate; an anode and a cathode disposed over the substrate; a luminescent layer disposed between the anode and the cathode are described in which the luminescent layer includes a host and ≥ 1 dopant; the host including a solid organic material comprising a mixture of ≥ 2 components including a first component that is an organic compound capable of transporting either electrons and/or holes and of forming both monomer state and an aggregate state and a second component of that is an organic compound that upon mixing with the first host component is capable of forming a continuous and substantially pin-hole-free layer, while the dopant of is selected to produce light from the light-emitting device. The first component is capable of forming an aggregate state either in the ground electronic state or in an excited electronic state that results in a different absorption or emission spectrum or both relative to the absorption or emission spectrum or both of the monomer state, resp., or of forming an aggregate state whose presence results in a quantum yield of luminescence of the monomer state being different relative to the quantum yield of luminescence of the monomer state in the absence of the aggregate state. The aggregate state may be crystalline

IT 22815-17-4, 2,3,4-Triphenyl-9,9'-spirobifluorene

67665-45-6, 9,9'-Spirobi(9H-fluorene)-2,2'-diamine

67665-48-9, 9,9'-Spirobi(9H-fluorene)-2,2'-dicarbonitrile

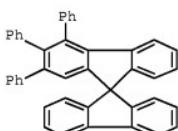
171408-92-7 462104-51-4 473906-55-7

497157-27-4 503307-40-2 503307-41-3

RL: DEV (Device component use); USES (Uses)
(organic light-emitting diode devices using luminescent mixts.)

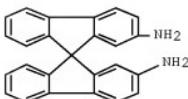
RN 22815-17-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2',3',4'-triphenyl- (CA INDEX NAME)



RN 67665-45-6 CAPLUS

CN 9,9'-Spirobi[9H-fluorene]-2,2'-diamine (CA INDEX NAME)



RN 67665-48-9 CAPLUS

CN 9,9'-Spirobi[9H-fluorene]-2,2'-dicarbonitrile (CA INDEX NAME)



RN 171408-92-7 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetraphenyl- (CA INDEX NAME)



RN 462104-51-4 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-naphthalenyl- (CA INDEX NAME)



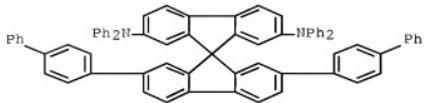
RN 473906-55-7 CAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2',7'-bis([1,1'-biphenyl]-4-yl)- (CA INDEX NAME)

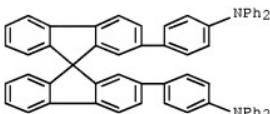


RN 497157-27-4 CAPLUS

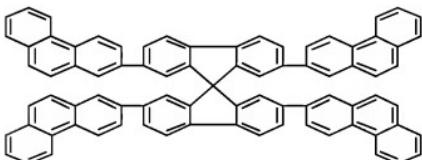
CN 9,9'-Spirobi[9H-fluorene]-2,7-diamine,
2',7'-bis([1,1'-biphenyl]-4-yl)-N2,N7,N7-tetraphenyl- (CA INDEX NAME)



RN 503307-40-2 CAPLUS
CN Benzenamine, 4,4'-(9,9'-spirobi[9H-fluorene]-2,2'-diyl)bis[N,N-diphenyl-
(CA INDEX NAME)



RN 503307-41-3 CAPLUS
CN 9,9'-Spirobi[9H-fluorene], 2,2',7,7'-tetra-2-phenanthrenyl- (CA INDEX
NAME)



OS.CITING REF COUNT: 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS
RECORD (17 CITINGS)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:542530 CAPLUS [Full-text](#)
DOCUMENT NUMBER: 137:239381
TITLE: Highly bright blue organic light-emitting devices
using spirobifluorene-cored conjugated compounds
AUTHOR(S): Wu, C. C.; Lin, Y. T.; Chiang, H. H.; Cho, T. Y.;

Chen, C. W.; Wong, K. T.; Liao, Y. L.; Lee, G. H.;
 Peng, S. M.
CORPORATE SOURCE:
 Graduate Institute of Electronics Engineering,
 Graduate Institute of Electro-Optical Engineering,
 Department of Electrical Engineering, National Taiwan
 University, Taipei, 10617, Taiwan
SOURCE:
 Applied Physics Letters (2002), 81(4), 577-579
PUBLISHER:
 American Institute of Physics
DOCUMENT TYPE:
 Journal
LANGUAGE:
 English
AB An efficient and morphable, stable pyrimidine-containing spirobifluorene-cored oligoaryl, 2,7-bis[2-(4-tert-butylphenyl) pyrimidine-5-yl]-9,9'-spirobifluorene (TBSF), as an emitter or a host for blue organic light-emitting devices (OLEDs), is reported. The steric hindrance inherent with the mol. structure renders the material a record-high neat-film photoluminescence (PL) quantum yield of 80% as a pure blue emitter (PL peak at 430 nm) of low mol. weight, and a very high glass-transition temperature (Tg) of 195°. Blue OLEDs employing this compound as the emitter or the emitting host exhibit unusual endurance for high currents over 5000 mA/cm². When TBSF was used as a host for perylene in a blue OLED, maximal brightness of .apprx.80000 cd/m² had been achieved, representing the highest values reported for blue OLEDs under d.c. driving.
IT 459216-40-1
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYF (Physical process); PROC (Process); USES (Uses)
 (highly bright blue organic light-emitting devices using
 spirobifluorene-cored conjugated compds.)
RN 459216-40-1 CAPLUS
CN Pyrimidine, 5,5'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[2-[4-(1,1-dimethylethyl)phenyl]- (CA INDEX NAME)



OS.CITING REF COUNT: 76 THERE ARE 76 CAPLUS RECORDS THAT CITE THIS RECORD (76 CITINGS)
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d ibib abs hitstr 8-9

L20 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2005:493816 CAPLUS Full-text
DOCUMENT NUMBER: 143:34908
TITLE: Organic electroluminescent element
 hole-blocking layers with six-membered ring
 unit-containing compounds and spirobifluorene
 derivatives and electronic devices using them

INVENTOR(S): Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp
 PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|--------------------|----------|
| WO 2005053055 | A1 | 20050609 | WO 2004-EP13314 | 20041124 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, NA, SD, SL, SZ, T2, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10356099 | A1 | 20050707 | DE 2003-10356099 | 20031127 |
| EP 1687857 | A1 | 20060809 | EP 2004-803245 | 20041124 |
| EP 1687857 | B1 | 20090909 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS | | | | |
| CN 1954446 | A | 20070425 | CN 2004-80035289 | 20041124 |
| JP 2007520875 | T | 20070726 | JP 2006-540365 | 20041124 |
| AT 442675 | T | 20090915 | AT 2004-803245 | 20041124 |
| US 20070051944 | A1 | 20070308 | US 2006-580491 | 20060523 |
| KR 2006122874 | A | 20061130 | KR 2006-7010343 | 20060526 |
| PRIORITY APPLN. INFO.: | | | DE 2003-10356099 A | 20031127 |
| | | | WO 2004-EP13314 W | 20041124 |

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 143:34908

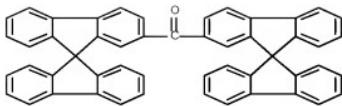
AB Organic electroluminescent devices comprising an anode, a cathode, and ≥ 1 emitting layer, which consists of a matrix material which is doped with ≥ 1 phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with ≥ 1 triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

IT 782504-07-8

RL: DEV (Device component use); USES (Uses)
 (organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

RN 782504-07-8 CAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



IT 853154-59-3P 853154-60-6P 853154-61-7P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

RN 853154-59-3 CAPLUS

CN 1,3,5-Triazine, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



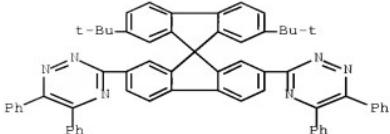
RN 853154-60-6 CAPLUS

CN 1,3,5-Triazine, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,6-diphenyl- (9CI) (CA INDEX NAME)



RN 853154-61-7 CAPLUS

CN 1,2,4-Triazine, 3,3'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[5,6-diphenyl- (CA INDEX NAME)

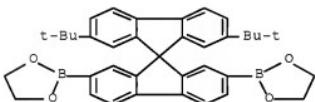


IT 463944-32-3 853154-62-8

RL: RCT (Reactant); RACT (Reactant or reagent)
 (organic electroluminescent element with hole-blocking layers
 formed from compds. including six-membered rings and spirobifluorene
 derivs. and electronic devices using them)

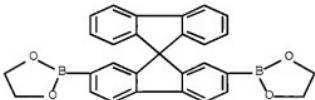
RN 463944-32-3 CAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(2',7'-bis(1,1-dimethylethyl)-9,9'-spirobi[9H-fluorene]-2,7-diyl)bis- (CA INDEX NAME)



RN 853154-62-8 CAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis- (9CI)
 (CA INDEX NAME)



OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD
 (9 CITINGS)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2004:609961 CAPLUS [Full-text](#)

DOCUMENT NUMBER: 141:164549

TITLE: Pyrimidine spirobifluorene oligomer for

organic light-emitting device

INVENTOR(S): Wong, Ken Tsung; Liao, Yuan Li; Wu, Chung Chih; Lin, Yu Ting; Chiang, Huo Hsien

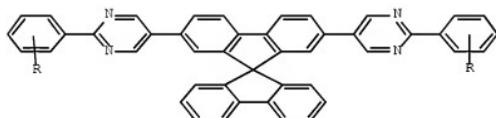
PATENT ASSIGNEE(S): Echem Hightech Co., Ltd., Taiwan
 SOURCE: U.S. Pat. Appl. Publ., 27 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----------------|------|----------|-----------------|----------|
| US 20040147742 | A1 | 20040729 | US 2004-759046 | 20040120 |
| US 6872824 | B2 | 20050329 | | |
| TW 278503 | B | 20070411 | TW 2003-101646 | 20030121 |

PRIORITY APPLN. INFO.: TW 2003-101646 A 20030121

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OTHER SOURCE(S): MARPAT 141:164549
 GI



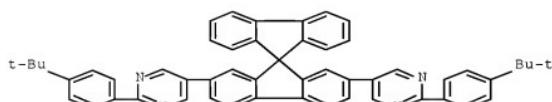
AB Fluorene-based pyrimidine-containing conjugated oligomers used in organic light-emitting devices are described by the general formula I ($R = -OCnH2n+1$ ($n = 1-4$), $-C4H9$, $-C6H5$, or H). The oligomers may be employed in organizing light-emitting devices as electron-transport emitting layers, emitting layers, a host in the emitting layers, electron transport layers, and hole-blocking layers.

IT 459216-40-1P 728911-50-0P 728911-51-1P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (pyrimidine spirobifluorene oligomers for organic light-emitting devices)

RN 459216-40-1 CAPLUS

CN Pyrimidine, 5,5'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[2-[4-(1,1-dimethylethyl)phenyl]- (CA INDEX NAME)



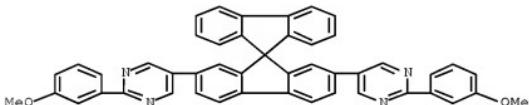
RN 728911-50-0 CAPLUS

CN Pyrimidine, 5,5'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[2-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



RN 728911-51-1 CAPLUS

CN Pyrimidine, 5,5'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[2-(3-methoxyphenyl)- (9CI) (CA INDEX NAME)

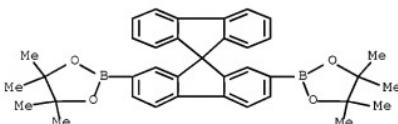


IT 728911-52-2

RL: RCT (Reactant); RACT (Reactant or reagent)
(pyrimidine spirobifluorene oligomers for organic light-emitting devices)

RN 728911-52-2 CAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[4,4,5,5-tetramethyl- (CA INDEX NAME)

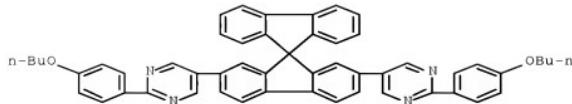


IT 728911-49-7P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(pyrimidine spirobifluorene oligomers for organic light-emitting devices)

RN 728911-49-7 CAPLUS

CN Pyrimidine, 5,5'-(9,9'-spirobi[9H-fluorene]-2,7-diyl)bis[2-(4-butoxyphenyl)- (9CI) (CA INDEX NAME)

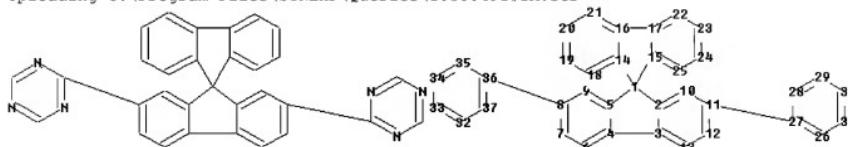


OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
 (1 CITINGS)
 REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=>

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Uploading C:\Program Files\STNEXP\Queryes\10580491#1A.str



ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
 24 25 26 27 28 29 30 31 32 33 34 35 36 37

chain bonds :

8-36 11-27

ring bonds :

1-2 1-5 1-14 1-15 2-3 2-10 3-4 3-13 4-5 4-6 5-9 6-7 7-8 8-9 10-11
 11-12 12-13 14-16 14-18 15-17 15-25 16-17 16-21 17-22 18-19 19-20 20-21
 22-23 23-24 24-25
 26-27 26-31 27-28 28-29 29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

exact bonds :

1-2 1-5 1-14 1-15 3-4 8-36 11-27 16-17

normalized bonds :

2-3 2-10 3-13 4-5 4-6 5-9 6-7 7-8 8-9 10-11 11-12 12-13 14-16 14-18
 15-17 15-25 16-21 17-22 18-19 19-20 20-21 22-23 23-24 24-25 26-27 26-31
 27-28 28-29
 29-30 30-31 32-33 32-37 33-34 34-35 35-36 36-37

isolated ring systems :

containing 1 : 26 : 32 :

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
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 22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom 29:Atom 30:Atom
 31:Atom 32:Atom
 33:Atom 34:Atom 35:Atom 36:Atom 37:Atom

L1 STRUCTURE UPLOADED

=> d l1

L1 HAS NO ANSWERS

L1 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l1

SAMPLE SEARCH INITIATED 19:27:45 FILE 'REGISTRY'

SAMPLE SCREEN SEARCH COMPLETED - 10 TO ITERATE

100.0% PROCESSED 10 ITERATIONS
SEARCH TIME: 00.00.01

1 ANSWERS

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
 BATCH **COMPLETE**

PROJECTED ITERATIONS: 11 TO 389
PROJECTED ANSWERS: 1 TO 80

L2 1 SEA SSS SAM L1

=> s l1 full

FULL SEARCH INITIATED 19:27:52 FILE 'REGISTRY'

FULL SCREEN SEARCH COMPLETED - 106 TO ITERATE

100.0% PROCESSED 106 ITERATIONS
SEARCH TIME: 00.00.01

3 ANSWERS

L3 3 SEA SSS FUL L1

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l3

L4 4 L3

=> d ibib abs hitstr 4

L4 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:726758 CAPLUS Full-text
DOCUMENT NUMBER: 140:163418
TITLE: Molecular Tectonics. Porous Hydrogen-Bonded Networks
 Built from Derivatives of 9,9'-Spirobifluorene
AUTHOR(S): Fournier, Jean-Hugues; Maris, Thierry; Wuest, James D.

CORPORATE SOURCE: Departement de Chimie, Universite de Montreal,
Montreal, QC, H3C 3J7, Can.
SOURCE: Journal of Organic Chemistry (2004), 69(6), 1762-1775
CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 140:163418

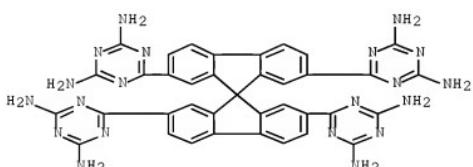
AB Mols. with multiple sites that induce strong directional association tend to form open networks with significant vols. available for the inclusion of guests. Such mols. can be conveniently synthesized by grafting diverse sticky sites onto geometrically suitable cores. The characteristic inability of 9,9'-spirobifluorene to form close-packed crystals suggests that it should serve as a particularly effective core for the elaboration of mols. designed to form highly porous networks. To test this hypothesis, various new tetrasubstituted 9,9'-spirobifluorenes with hydrogen-bonding sites at the 3,3',6,6'-positions or 2,2',7,7'-positions were synthesized by multistep routes. Four of these compds. were crystallized, and their structures were determined by X-ray crystallog. In all cases, the compds. form extensively hydrogen-bonded networks with high porosity. In particular, 43% of the volume of crystals of 3,3',6,6'-tetrahydroxy-9,9'-spirobifluorene (28) is available for the inclusion of guests, whereas the porosity is only 28% in crystals of tetrakis(4-hydroxyphenyl)methane, a close model that lacks the spirobifluorene core. Similarly, the porosities found in crystals of 2,2',7,7'-tetra(acetamido)-9,9'-spirobifluorene (33) and 2,2',7,7'-tetrasubstituted tetrakis(diaminotriazine) 39 are 33% and 60%, resp. Moreover, the porosity of crystals of 2,2',7,7'-tetrasubstituted tetrakis(triaminotriazine) 40 is 75%, the highest value yet observed in crystals built from small mols. These observations demonstrate that a particularly effective strategy for engineering mols. able to form highly porous networks is to graft multiple sticky sites onto spirobifluorenes or other cores intrinsically resistant to close packing.

IT 622011-42-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(crystal structure; porous hydrogen-bonded networks built from derivs.
of 9,9'-spirobifluorene)

RN 622011-42-1 CAPLUS

CN 1,3,5-Triazine-2,4-diamine, 6,6',6'',6'''-(9,9'-spirobi[9H-fluorene]-
2,2',7,7'-tetracyl)tetrakis- (9CI) (CA INDEX NAME)



OS.CITING REF COUNT: 64 THERE ARE 64 CAPLUS RECORDS THAT CITE THIS RECORD (65 CITINGS)
REFERENCE COUNT: 126 THERE ARE 126 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

